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INSURANCE COMPANIES AND PUBLIC HEALTH ACTIVITIES.

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It should not be amiss at a meeting of the Sociological Section of the American Public Health Association to use as a text for an address on the subject of "Insurance Companies and Public Health Activities," the sociological dictum of a writer who, while a great sociologist, has not been universally recognized as such. In order that you may not be kept longer in suspense, let me say that I refer to George Ade, the well-known author of "Fables in Slang," who, in his inimitable satire on the amateur philanthropist entitled "The Good Fairy with the Lorgnette," concludes with the moral "In uplifting, get underneath." I believe this literary gem of four words should be treasured by social workers and sociologists, whether they be philanthropists, health officers, insurance agents or what not.

It may not be an exaggeration to say that the world is at present "health mad." The discoveries of the past twenty-five years in medical science have been startling and revolutionary. Humanity, after centuries of acquaintance, had become fairly familiar with the common and ordinary dangers of life and limb, and in part they had lost their early terrors. Hardly had we moderns adjusted ourselves to accept these visitations with equanimity, when there came a host of pathologists and bacteriologists and kindred spirits to startle us out of our hardly acquired contentment. We were told that external terrors were trivial compared to those of internal origin. Germ after germ was held before our astonished eyes, magnified in the ratio of our fears. We had become accustomed to the belief that night air was bad and in large quantities might be fatal; that tuberculosis and insanity proved the correctness of Deuteronomy, that the sins of the parents

would be visited on the children; that children might as well have infantile diseases early in their careers since they must and would have them sooner or later. Who among us doubted that a cold was something tangible which was really caught, and that the best cure was either to abstain from food or to eat plentifully—the old-time doctor was undecided as to which of these methods was best. And when old age came, like the deacon's one-horse shay we simply "wore out." There was no talk of phagocytosis or arteriosclerosis. Such vulgar words were not in our vocabulary. We softened and toned down "old age", since it was inevitable, and made it as far as possible a thing of beauty. "Rivers of life" and "fountains of youth" were probably never expected to accomplish more then the proverbial "three score and ten." Men were concerned less about the causes of death than they were about what might happen after death.

All these beautiful myths and fallacies, these world-old beliefs in inaccuracies, disappeared with the entrance of the bacillus on the scientific stage. Today, divested as we are of our old superstitions, of our faiths in our old traditions, we stand in the beating rays of the new light in scientific discovery—otherwise and prosaically called the "germ theory." Most of us are blinded and dazzled and, paradoxical as it may seem, are groping even more blindly than we did in the dark.

Let us drop metaphor and endeavor to bring out what we mean in Anglo-Saxon English. The facts are these: the great mass of the common people is still unacquainted, excepting in a rudimentary way, with the wonderful discoveries in medical science during the past few decades. Such knowledge as has been imparted to thousands and hundreds of thousands exemplifies Pope's adage that "A little learning is a dangerous thing." The germ theory of disease is involved and but little understood, or more likely misunderstood, excepting by specialists whose life work has been the study of the remarkable phenomena which go on daily in the human organism.

Interpretations of studies made by these specialists may be found in medical magazines and periodicals. These, however, are too technical and abstruse for the layman. The public generally does not understand the *raison d'être* for much of our modern health campaign. Recent discoveries are not always presented so as to be intelligible. But few of the medical profession have as yet translated the technique of medical discovery in terms of every-day, commonplace thought, or learned the secret of imparting to the multitude of their patients a knowledge of the recent discoveries in medical science. Too many practitioners still see medicine from the curative and not from the preventive side. As a result the attitude of the public to the medical fraternity is, in a limited number of cases, an undoubting and blind faith; in countless others the attitude is a respectful but a fearful one; but in the cases of entirely too many of the remainder this fear

is supplemented by distrust. The story told by one of our visiting nurses is characteristic of this attitude. One of her colored patients overheard the conversation between the nurse and the colored doctor regarding her condition. When the physician had gone the patient turned to the nurse and excitedly cried, "Say, missus, is dere really anything de matter wif me, 'cause if dere is I wants a white doctor."

Attempts have been made in a number of ways to supplement the education of the common people given by the medical profession. The great newspaper and magazine press of the country has devoted pages of its issues to the attempt to popularize health education and to teach its readers modern theories. Frequently, in the exuberance of zeal, these attempts have over-shot the mark. The scare-head line has been adapted to health literature—even the germ has been muckraked. Like the trusts, the fact has been overlooked that there may be good and bad germs. A reputable and conservative magazine, in a recent article on insect life, uses the extraordinary caption, "The Horrors of our Back Yard." If the opinion of "Mr. Average Reader" were asked after the pabulum which has been offered to him, it would probably be found that he had become an Oriental fatalist. He would probably reply that since he was beset on all sides by invisible foes he had better cry "Kismet." His ancestors in the old days knew four elements only: water, air, earth and fire. The first two, which he formerly thought were his friends, he learns today are filled with invisible enemies. Even the earth which gave him food has grown treacherous and breeds tetanus. Fire, formerly his one great enemy, now seems to be the only weapon to protect him.

Another method of instructing the common people in hygiene has been through organizations for this specific purpose. I need only mention the imposing array of special hospitals, anti-tuberculosis movements, societies for combating infant mortality and infantile blindness, and others for teaching sex hygiene, eugenics and the like. To the extent to which they have followed sane and rational paths they have been invaluable. But even among these there have been lapses and an utter misconception of the point of approach. The result in the latter case has not been intelligent coöperation, but unreasoning fear. If, for example, compulsory segregation of the advanced consumptive means life imprisonment, we can imagine the despair and terror of the unfortunates who are banished, like Monte Cristo, to a living death. It is among this group that the charlatan and the quack reap their harvest. The new disease, phthisio-phobia, the result of some of our misguided teachings, is more virulent than the old-time "consumption." Can you imagine the mixed sensations inspired in the minds of citizens when, in a recent house-cleaning campaign, their coöperation was heartily invited by the authorities, and in the next breath they were told of fines and imprisonment for infractions of regulations? The

indifference on the part of many working people to sanatorium treatment for tuberculosis is caused by their knowledge of discharged patients who, owing to the lack of any provision for after care, soon revert to a condition of hopeless illness. The waste, both in time and money, in sanatorium treatment without subsequent care of discharged patients is incalculable. In his book, "The Milk Question," Doctor Rosenau has stated that "There is a temptation on the part of the popular exponents of science toward overstatement. When all the indictments are brought together we find that milk is an enormous criminal. The dangers are real enough and bad enough without the need of exaggeration."

In his article in a recent number of the AMERICAN JOURNAL OF PUBLIC HEALTH, Doctor Fulton has caustically commented upon the danger of overstatement in attempts to popularize sex hygiene. In the opinion of thoughtful men and women it is questionable whether some of the recent attempts made to educate children in sex relations may not, in the long run, be harmful rather than helpful. Too much of the well-meaning philanthropy and welfare work is of the "good fairy with the lorgnette" type. It does not take sufficiently into consideration the traditions and beliefs of its beneficiaries. In its attempt to cure and to prevent disease it has forgotten to be human.

Still a third method has developed for educating the masses in the elements of modern sanitation and hygiene. Our states and municipalities, through their health departments, have actively and energetically entered the field of popular instruction. The health officer's work necessarily has its limitations. As an official he is unwillingly, but alas too frequently, the man with the club. If he does not arouse fear, he unintentionally and unconsciously engenders suspicion. Rules and regulations of the average board of health, written as they frequently are in legal verbiage, have no tendency to produce peace of mind in the average reader. Too much, therefore, cannot be said in praise of those cities and states, still too few in number, which in spite of the difficulties inherently surrounding their work have nevertheless made determined efforts to popularize their activities and to educate their citizens.

Quite recently the realization has grown that insurance companies may become a valuable factor in educating the great masses of the population in human life extension. It is admitted that, in the great body of agents and medical examiners in the employ of life insurance companies, there is a potent force for educating men and women in the doctrines of sanitation and hygiene. Perhaps unconsciously the life insurance agent has always been such a dominant force. In the act of writing a policy or in soliciting the individual for insurance, he unconsciously, both to himself and to the prospective policy-holder, raises the question of the uncertainty of life and the need for conserving it to its fullest extent. The medical examina-

tion, to which the prospective policy-holder must submit in order to obtain his policy, again brings to his notice the possibility of early death, the uncertainties of life, and the risks and dangers which meet his path everywhere. No thoughtful man who insures himself for the protection of his family can take insurance without having forced upon him the conviction that of even more value to his family than the policy which he has taken are his ability and capacity to support his dependents more fully than they would be able to do for themselves with the proceeds of his insurance.

If, therefore, it is true that the insurance agent has unconsciously been the exponent of long life and right living, how much more would he be a factor if he would consciously undertake such activities. The educated industrial insurance agent is already beginning to take his place in the community as a social worker. It is he who is entering the homes of thousands of working men and women, insuring their families against the contingencies of death, and incidentally helping them and instructing them along all lines of social activity and social welfare.

Life insurance in the past has been a business. The rewards to agents have not been inconsiderable. Primarily it has been a matter of contract, under which two parties have definitely agreed to live up to certain obligations. It is becoming more and more evident daily, both in our legislative enactments and in the thought of the general public, that life insurance is not a business, and that it can no longer be conducted along purely business lines. Insurance today is really a great social institution. The insurance company is simply a medium through which aggregations of individuals protect themselves against the risks and contingencies of life. As such a social institution it must be conducted on social lines and it goes without saying that all of its representatives, officers as well as agents, must have the social point of view.

The particular value of the insurance agent in a health campaign lies in the fact that the relation between him and his policy-holders is largely a contractual one. The payment of premiums means the disbursement of a definite amount of money. For this disbursement the insured demands a *quid pro quo*. Naturally he desires that insurance benefits should be given to him at the lowest possible cost. If, through his education by the insurance agent, the assured can be made to realize that better care of his health will result eventually in saving to his pocket-book, there is given to him the direct incentive to coöperate with the company which insures him, in any campaign which it may undertake to improve health conditions. I believe this to be one of the vital differences, and at the same time advantages, of a health campaign conducted by insurance companies. Such a campaign typifies George Ade's moral, "In uplifting, get underneath." In the relation between the policy-holder and his company through the agent there is no sense of patronage, no attempt to superimpose the wishes and

possibly good intentions of any particular class or group. The policy-holder realizes that the motives which inspire the insurance company represent the concerted opinion of policy-holders, and that it is part of his duty to join in any experiment which the insurance company may make to improve his physical well-being and to make him live longer.

In this campaign of insurance companies the medical examiner as well can be a most effective agent. It is the business of the examiner to determine whether or not the individuals submitted to him for examination are desirable risks. Volumes could be filled with the histories of men who have been rejected for insurance by life insurance examiners. So far as I know, practically no attempt has been made by insurance companies to educate these rejected risks regarding the manner in which they should live in the hope that they may subsequently be entitled to insurance. In such a campaign, if it were inaugurated, the medical examiner would be a most important factor. As the result of the examination which he has made, he is in a position to give positive instruction to applicants for insurance and to guide them in a correct mode of life. It appears from the comparatively limited studies that have been made that re-examinations of policy-holders have had a beneficial effect, and that the advice given to those who were found below standard may result in a better mortality among this group. Unquestionably advice given by medical examiners to rejected risks would bring about similar results in a lowering of the mortality rate.

This thought leads up to another in connection with the value of insurance agents and insurance examiners as educators of the public in health matters.

In a paper which I had the honor to read before the American Public Health Association at the Richmond (Va.) meeting four years ago, I dwelt upon the possibilities of effective work through coöperation between insurance companies and health officers, and expressed the desire of the Metropolitan Life Insurance Company to coöperate with official health boards in preventing tuberculosis and other, preventable diseases. We were led to the belief in the value of such coöperation by the results obtained in the city of Chicago through the successful distribution by our agents of "The Little Ballot," in which the question of the erection of a municipal sanatorium was brought to the notice of the voters of Chicago. Since this paper was presented the services of our agents have been used in other municipalities, not only in the education of the masses in the necessity for municipal sanatoria, but during the past spring we have actively coöperated with health officers in city-cleaning campaigns. In fact in a number of cities the suggestion for such a city-cleaning campaign was brought to the notice of the mayor and health officers by our representatives. We recently sent a letter to health officers throughout the United States asking them for suggestions

regarding ways in which we might be of service to them. It is gratifying to report at this time on the willingness and at times even enthusiasm with which health officers have met this suggestion. Our correspondence with health officers is an extensive one and we are in hopes that the arrangements which have been entered into may be mutually beneficial.

I mention these facts to indicate to you that a health campaign, similar to the one which the Metropolitan Life Insurance Company has been conducting for the last few years, comes distinctly within the province of all insurance companies. The health of the communities in which they conduct their business is a matter of vital concern to them. If anything can be done through their agency staffs to develop public opinion for municipal health campaigns it will place in the hands of health officers the powers and the financial means to put their respective communities on a healthful basis. The insurance companies, while acting with a true civic spirit, may at the same time improve their own states by the probable reduction in mortality which ensues as a result of their activities.

Coöperation between health officers and insurance companies is only in its beginning. There are many possibilities still undeveloped for the health officer to avail himself of through the services of insurance companies, and the reverse. I need only mention the question of securing accurate vital statistics. It is unnecessary for me to dilate upon the great value of accurate vital statistics for insurance companies. If only the states in our so-called "registration area" today attempt to tabulate their mortality records in a proper way, it is due to the fact that the population at large has not grasped the significance of such statistics and their bearing upon public health. No one is in a better position than associations of insurance agents to develop a public opinion sufficiently strong to require legislators to empower their health departments to assemble their mortality records in a manner to be useful and available for further study and an analysis.

Of equal importance with mortality statistics are statistics of morbidity. The United States is woefully lacking in data of this kind. In fact it can be said that we practically have no morbidity statistics that are reliable. In Germany and other European countries every effort has been made for years, particularly through the sickness insurance societies, to tabulate their experience and to obtain a record of disease and of the causes which produce it. The need for similar studies has been well recognized by public health officials in the United States, and it is significant to learn that at a meeting of state and territorial health officials with the United States Public Health and Marine Hospital Service, held in Minneapolis during the week of June 16, a uniform bill for reporting diseases was presented, discussed, and unanimously adopted.

Here is another great opportunity for the insurance agent. Legislation

is not an automatic thing. The average legislator rises only to the height of the sentiment and desires of his constituency. By concerted effort it would be possible for the insurance agents of the life companies in the United States, by the distribution of the literature and by personal agitation, to bring about the enactment of such a uniform law in all the states of the Union.

If I lay particular stress upon the value of the industrial insurance agent in a health campaign, it is because of the peculiar relation which he has to policy-holders. In the first place, the industrial agent visits policy-holders weekly. This gives him an opportunity of getting into close touch with the insured. Very frequently he is of the same stratum of society as the policy-holder. The relationship between the agent and policy-holder is not one based on sufferance or condescension. He does not come in the guise of a charity visitor. He has nothing to offer in the way of doles or alms or gratuitous care. Quite frequently the relationship grows to be one of considerable intimacy. The acquaintance which ripens between the agent and the policy-holder soon loses its formality. The agent meets the family of the policy-holder not only when joy is in the home, but when sorrow and death enter there. Through the agent it is possible to bring to workingmen's families a knowledge of the laws and rules of sanitation and hygiene which cannot be obtained in any other way. The sense of confidence which the policy-holder has in the agent, through this constant meeting with him on a plane of equality, gives an opportunity of carrying out Ade's dictum "In uplifting, get underneath."

The modern conception of insurance as a social problem makes it desirable for officers of insurance companies to develop an agency staff instructed in the basic principles of modern hygiene; to distribute literature among policy-holders written in a popular form, so that the literature will be read and appreciated, instead of being consigned to the waste-basket; to develop a medical service for examination and re-examination of policy-holders, and a nursing service for their care when ill. When they have done this it remains for public health officers, or organizations and societies engaged in the improvement of health conditions, to make use of the machinery of the insurance company. What the possibilities are for the future along this line is indicated by what I have said regarding coöperation in the past.

How, then, may we develop the most rational scheme to make ninety millions of our people active participants in our campaign for the betterment of health conditions? How can we teach them that the modern theory of disease spells hope and not fear; that it is possible, by the coöperation of all, to minimize preventable sickness and to extend the span of human life?

(1) I am inclined to believe that there will be no dissenting voice to my

advocacy of the public school as the primary, all-important focus for the dissemination of health instruction. The child is at the plastic age when any form of instruction makes an impression, either good or bad, that is lasting and permanent. Our school curricula must be readjusted to lay more stress on the essentials of human life and health. One boy of my acquaintance, now in a high school, has never had a word of instruction in the rudiments of anatomy or physiology. I believe it to be more important to educate future men and women in human biology than to make them mental gymnasts. The school, supplemented by the home, must be the fountain head of health knowledge. The home, unfortunately, owing to the inefficiency of the schools in the past, still lacks parents competent to instruct their progeny. The children of today and of the future should have the training in hygiene and life conservation to enable them later, as parents, to instruct their own children. When such an ideal state of affairs exists, the need of many of our health conservation movements will have disappeared. Can one conceive of a situation more pathetic than the remarkable development, in recent years, of milk stations and similar agencies to educate "mothers" in the care of their infants. The eugenic legislation of the future will require not only physical fitness in those who contemplate matrimony, but will demand that if healthy children are brought into the world their nurture shall not be intrusted to incompetent and ignorant parents.

(2) Better opportunities should be accorded by medical colleges and schools for the education of physicians in the social value of instruction in sanitation and hygiene. The need for such courses of instruction is only too apparent. Considerable progress has already been made in this direction in Germany. The physicians who are employed under the compulsory insurance system of that country have long since realized the necessity for adequate preparation on their part to assist in popularizing the hygiene campaign conducted under the compulsory insurance scheme.

(3) Societies for the improvement of health conditions, public health officers, and insurance companies must come to an understanding regarding the functions of each and the possibilities which lie within the scope of each to bring about a better coördination of work.

(4) Insurance companies must see the duty which they as social institutions owe to their policy-holders in instructing and educating them in the principles of hygiene. Such campaigns may be and should be conducted by all companies whose interest is the improvement of the health of the policy-holders and the extension of human life.

(5) The true test, however, of the value of insurance in promoting health will be made only when a comprehensive system of sickness insurance is developed in the United States. Such insurance companies as have entered this field, and the various benevolent and mutual benefit societies which

insure their members against sickness, have as yet made but little effort to do more than pay sickness benefits in case of the invalidity of their policy-holders or members. Sickness insurance, as developed in Germany, whatever may be its defects and weaknesses, has demonstrated quite clearly that, under an insurance system which not only pays sickness benefits but gives medical treatment, it is possible to arouse the enthusiasm and coöperation of the insured in activities making for their physical improvement. The German compulsory sickness insurance scheme is fundamentally an effort to reduce unnecessary sickness. The careful study of the statistics which have accumulated in the past twenty-five years points the way to minimizing occupational hazards and resulting occupational disease. As a direct result of this form of insurance it was early recognized that to insure health decent housing conditions must be provided. Again, as a purely economic proposition, it was seen that it was cheaper to pay for the best possible treatment in the incipiency of disease, rather than to let the sufferer become incapacitated and pay benefits for indefinite periods. Statistics of the German invalidity department of Berlin, in the last few years, show the gratifying results of such a campaign. It seems to be proved clearly by these statistics that year by year proportionately more old-age pensions and fewer invalidity pensions are being paid by the insurance department; in other words, fewer working men and women are becoming incapacitated at the earlier ages, and more and more working men and women are living to age 70, at which time the old-age pension automatically takes effect.

The educational value of such a scheme cannot be overestimated. Sickness is a matter of daily occurrence in the life of the average individual. It is not a thing of the dim future, like death and old age. Unnecessary sickness is a direct charge on the individual concerned. If he can be made to see that a lowering of the morbidity rate is something which affects him financially, his active coöperation in securing a reduction in the amount of illness can readily be secured.

WHY ARE MODERN INFECTIOUS DISEASES MILD?

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Read before the Section of Public Health Officials, American Public Health Association, Colorado Springs, September, 1913.

To offer an hypothesis explaining a phenomenon before being sure that the phenomenon exists is perhaps more a relaxation than a contribution to serious discussion.

Let me say that in offering an hypothesis to account for the relative mildness of modern smallpox, modern scarlet fever, etc., as compared with ancient, I feel that I am handicapped by lack of proof that they are relatively milder; and, instead of proof, I must offer the widespread but indefinite "general impressions" of a great many of the older physicians; the descriptions of these diseases as given by many of the older writers; and the statistically derived but only subconsciously credible apparent falling off in the mortality rates.

Against each of these sources of belief stands one or more possible fallacies. The decrease in the severity of disease as it presents itself to the old physician, looking backward, may be no more than an illusion, due to the greater impression made on his mind as a young man just setting out to establish his practice, by the cases he saw then, as compared with the smaller impression quite similar cases may make on him now; or it may be due to the fact that a physician is apt to judge by end results; and because modern treatment saves patients that would have died years ago, it seems to him to mean decrease in the severity of the disease, although it means only an increase in the potency of the treatment.

The descriptions of the older writers must be discounted also, for we all know that it is not very long since only severe forms of disease were recognized—since patients were hardly considered as sick unless they were nearly dead. It is easily within the memory of all of us that mild diphtheria, mild scarlet fever, etc., were looked on as innovations, hardly worth serious study, dreams of the faddists. Naturally all the old writers discussed and emphasized the severe typical cases—and naturally the impression arises that only such cases existed.

The comparison of older statistics with those of today to determine the relative deaths against relative populations would be of considerable moment had we any reason for confidence in either the figures for deaths or the figures for populations.

We know that both of these essentials are far from reliable now—we guess on good grounds that they were far worse fifty years ago. As for relative deaths to relative cases, we do not dream that these are any where nearly accurate now—and they certainly were not then.

Notwithstanding all this lack of definite proof I assume that the widespread impression of relative mildness today does correspond with the facts, in smallpox, diphtheria, and perhaps in tuberculosis, at least; although my own tentative belief embraces also most of the other specific non-venereal infections.

At all events, explanations are often offered for this alleged present-day mildness. Perhaps the most often offered is the most fallacious of all. This is the explanation which attributes the mildness to a gradually accumulating inherited immunity, affecting the race as a whole.

The fallacy lies here: admitting for argument's sake, that immunity might be acquired by the race as proposed, how long has the race been acquiring it? This immunity has shown its effects only in the last 100 years—or 50, or 30, depending on the authority and the disease. But the human race has existed 6,000 years (more likely 100,000). The human race has suffered these diseases 6,000 years (more likely 100,000). What sort of gradually acquired inherited racial immunity would that be which showed no effect for 180 generations (more likely 3,000) and then sprang up fully armed in the last two or three?

Sometimes the explanation (of mild smallpox at least) is based on gradually acquired inherited immunity from artificial vaccination. That explanation has the merit—a limited merit it is true—that it does take into account the recent development of the mildness, although only for the one disease, smallpox. But this has its fallacies also. First, the mildness of present-day smallpox does not seem to have developed gradually since vaccination first came into use. It seems to be confined to the last twenty or thirty years, or even less. Second, the present mild smallpox is not confined to the much vaccinated races, but flourishes everywhere. Last, and most important of all, how is it possible to consistently conceive the development in one hundred years of inherited immunization from cowpox, which itself protects the vaccinated only five years, when the virile and life-long protection afforded by virulent smallpox had operated in the race for thousands of years without any such effect at all?

The second most commonly offered explanation of the present day mildness of the infectious diseases is "improvement in general sanitation." Here again we have no human statistics which are conclusive. If we may judge from the testimony of careful breeders of prize stock, however, the tendency of hygienic surroundings is to make animals more susceptible to infections rather than less—and it certainly does not become us at this stage to claim that the race now crowding into cities and living in

auto and smoke dust is under more sanitary conditions than our forefathers, out in the country. I doubt if the careful inquiries we so talk about, but don't make, into the actual case-rate fatality of the infectious diseases, would show more deaths per cases in "unsanitary" surroundings than in "sanitary" ones. Every one knows that the obstetrician fears infection more in the rich man's home than in the slums.

The third explanation, already partially dealt with, is that of improvement in treatment. But this evidently does not apply, for the vast majority of the mild cases of smallpox, scarlet fever, etc., of today are not treated by physicians—in fact most of them are not seen by physicians at all! How is it possible that improvements in treatment *which are not used*, could affect the diseases—unless we cynically say that after all this very absence of treatment is itself the improvement?

In brief, it appears that existing explanations are fallacious, and that no long continuing, gradually developing old factor in life is adequate.

There must have been some new factor, something tremendously powerful, tremendously widespread, and yet thoroughly well disguised.

I offer for discussion the hypothesis that this factor was Lord Lister's introduction of surgical antisepsis and asepsis, and the following sequence of arguments in support:

Call to mind the fearful condition of hospitals, fifty, even thirty and twenty years ago, such that the hospital death-rates in major surgery reached to 60 to 80 per cent. Call to mind that these deaths were only the high-water marks of widespread blood poisonings, putrid wounds, gangrenes, and "laudable pus." This means that the hospitals, the patients, the practitioners who attended them, formed one great combination for the breeding, increasing of virulence and prompt widespread distribution of strepto- and staphylo-cocci. The practitioner of that day carried, as we all know, strepto- and staphylo-cocci to his obstetric cases. We all remember the discovery of the cause of puerperal septicemia and the prompt measures that followed, practically abolishing it. But the practitioner carried these germs not only to obstetrical cases, but to all, hence also to smallpox and consumption, to scarlet fever and measles, to diphtheria and whooping-cough.

True it was not recognized then, as it is now, that the non-specific infections with strepto- and staphylo-cocci do more harm in these diseases than the original specific infections themselves. But now, we recognize this and it is time to take cognizance of it.

We have learned to abolish surgical infection by appropriate bacteriological technique. We are learning to abolish cross infections in contagious hospitals, also by appropriate bacteriological technique, borrowed in many respects from the surgeons. What we need now is still further to extend this technique to the care of all septic medical cases, whether they

suffer from the specific infections or not; for if we abolish the strepto- and staphylo-cocci from the ordinary infectious diseases, we shall practically abolish the diseases themselves—that is we shall leave them so mild as to be almost negligible.

SUMMARY.

1. Although we should hold as our ultimate aim the abolition of the specific infectious diseases, it is well to remember that the chief harm that they do is due to strepto- and staphylo-cocci as secondary infections.

2. As a life-saving proposition, the abolition of strepto- and staphylococci deserves more strenuous attention than the abolition of even the tubercle bacillus—ranking in this with the abolition of syphilis and gonorrhea.

3. The mildness of modern infectious diseases is due to the lessened virulence, smaller stock, and reduced distribution of the strepto- and staphylo-cocci formerly bred in our hospitals; and is to be ascribed to Lord Lister, who, however, probably did not foresee this development.

4. Public health men should campaign for medical asepsis as the surgeons did formerly for surgical asepsis; and not only in contagious hospitals, handling the specific infections, but also wherever septic cases are cared for. Indeed, we should probably gain immensely if all septic cases were isolated, as smallpox, etc., are now.

THE PRESENT STATUS OF PASTEURIZATION.

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Read before the General Sessions, American Public Health Association, Colorado Springs, September, 1913.

The art of pasteurization has made rapid progress during recent years. Only a few years ago the process was used secretly by milk dealers who simply made use of pasteurization as a means of preserving their milk.

Today pasteurization is so well known and its value so well recognized that it is the strongest advertising point of many milk companies.

Pasteurization is the heating of milk for a long or short period, as the various processes demand, at temperatures ranging from 140°F. to 185°F. The process is followed by rapid cooling to 50°F. or below.

The value of pasteurization may be viewed from both the sanitary and commercial standpoint. From a sanitary aspect, when properly performed, pasteurization affords protection against disease-producing organisms and has caused a reduction in the infantile death-rate resulting from intestinal troubles. From a commercial standpoint pasteurization is of value in increasing the keeping quality of milk.

There are three processes of pasteurization practised at present in this country. One is known as the flash or continuous process; the second, the holder or holding process, and the third is known as pasteurization in the bottle.

The flash process consists in heating rapidly to the pasteurizing temperatures, then cooling quickly. In this process the milk is only heated from thirty seconds to one minute and temperatures of 160°F. or above are usually used. In the holder process the milk is heated rapidly to temperatures from 140° to 150°F. and held at the desired temperature for approximately thirty minutes, after which it is cooled rapidly. Sometimes the milk, instead of being actually held for thirty minutes, is merely retarded in its passage through tanks so that thirty minutes is required for the milk to pass through. In such cases, however, there is no assurance that all the milk is held for the desired time.

The holder process, which is gradually replacing the flash process, is more efficient and is superior in every way.

Pasteurization in bottles is the most recent development of the process to be used on a practical scale. This process consists of bottling the raw milk in bottles with water-tight seal caps, then immersing them in hot water until heated to 145°F. The bottles are then held from twenty to thirty minutes. The cooling is accomplished by gradually lowering the

temperature of the water until the milk reaches 50°F. This method is now in use in several small milk plants. The advantage of the process of pasteurizing in the bottles lies in the fact that the milk, after heating, is not exposed until it reaches the consumer, thereby eliminating any danger of reinfection with disease-producing organisms through handling of the pasteurized milk. For this process to be successful it is, of course, necessary that the seals be absolutely water-tight, for the bottles are submerged in water and, during cooling, a leaking cap might allow infection by a polluted cooling water. The disadvantage of this process lies in the increased cost of pasteurization due to caps. It is claimed, however, that the saving in milk losses by pasteurization in bottles makes up for the added expense of seal caps.

In the pasteurization of milk one of the most important points is the prevention of reinfection after the heating process and, in this connection, I may say that we have developed a modification of the holder system of pasteurization which will prevent reinfection to a large extent. Briefly stated the process consists in pasteurizing milk at 145°F. for thirty minutes, then bottling it while hot into hot milk bottles which have been steamed just previous to filling. The bottles may be capped with ordinary paper caps and can be cooled by a blast of cold air. Laboratory studies of this process have been completed and the results are ready for publication. This process will be worked out on a commercial scale in the immediate future and it is hoped it will prove commercially successful as it possesses many points of merit.

The flash process is probably the most extensively used at the present time, although the holder process is fast taking its place. In 1912 we sent circular letters to dairies in all cities over 25,000 population, and from 231 replies found that 67 per cent. used the flash and only 33 per cent. the holder process. It is probable that at present a much larger percentage use the holder process. Only a small number of milk plants pasteurize directly in bottles for this process has only been developed recently in this country.

In general, the trend of pasteurization is toward the holder process and with this tendency the use of lower temperatures is becoming more universal.

As a general rule when the holder process is used milk is heated to 145°F. for from twenty to thirty minutes, and at least to 160°F. for one minute when the flash process is used. It is highly desirable from a bacteriological, chemical and economical standpoint that milk be pasteurized at low temperatures. From a bacteriological standpoint, pasteurization at 145°F. for thirty minutes gives assurance, as far as we know, of a complete destruction of disease-producing bacteria and, at the same time, leaves the maximum percentage of lactic-acid bacteria and only a small percentage of peptonizers in the pasteurized milk. When higher temperatures are

used the percentage of lactic-acid bacteria becomes less and less and the peptonizing group increases until at 180°F. and above, when the lactic-acid bacteria are practially destroyed, the majority of the bacteria left belong to the peptonizing group. The heat-resistant lactic-acid bacteria, which survive pasteurization at 145°F. for thirty minutes, play an important rôle in the souring of commercially pasteurized milk.

From a chemical standpoint the advantage of low temperatures lies in the fact that milk pasteurized at 145°F. for thirty minutes does not undergo any appreciable change which should affect its nutritive value or digestibility. Doctor Rupp of the dairy division has found that the soluble phosphates of lime and magnesia do not become insoluble and the albumin does not coagulate. At 150°F. about 5 per cent. of the albumin is rendered insoluble and the amount increases with higher temperatures until at 160°F. when about 30 per cent. of the albumin is coagulated. The heating period in his experiments was thirty minutes.

From an economic standpoint the advantage of pasteurization at low temperatures lies in the saving in the cost of heating and cooling the milk. For example, from data obtained from the dairy division, it has been figured that it requires about 23½ per cent. less energy to heat a given volume of milk to 145°F. than the same volume to 165°F. and in the cooling there would be less heat units to be removed and, therefore, the same percentage of saving during the cooling process.

In view of the advantages of pasteurization at low temperatures it seems advisable to recommend that milk be heated to 145°F. and held at that temperature for thirty minutes.

Pasteurization, at present, is looked upon with favor by medical men, sanitarians, dairymen and consumers, but the art has not developed without opposition and even now its value is not universally accepted. Most of the objections to pasteurized milk have been based on theory or upon experiments in which the milk was pasteurized at high temperatures, or upon clinical observations.

One of the greatest objections to pasteurized milk has been that the heating destroyed the lactic-acid bacteria and that putrefactive organisms were left which, when relieved from the restraining action of the acid-forming bacteria, would develop, forming poisonous toxins and putrefactive products. It was believed that the milk, on account of not being sour, would be consumed in that condition. This objection was based on experiments in which milk was heated to temperatures near the boiling point and cannot be applied to milk pasteurized at low temperatures. From the results of five years' work in the dairy division on commercial pasteurized milk we have found that such milk sours, as does raw milk, but the souring is delayed. As pointed out earlier in this paper pasteurization at low temperatures does not destroy all the lactic-acid bacteria for certain strains

are resistant to heat and are able to stand temperatures higher than 140°F.

Another objection to pasteurized milk has been that bacteria grow faster in it than in raw milk. In spite of several experiments which seem to prove this point, it has never been proven. We have found that the rate of bacterial increase is approximately the same when the comparison is made between raw and pasteurized milk having about the same bacterial content.

The objection that chemical changes are produced by pasteurization which render milk less digestible, particularly in the case of infants, may be true when milk is treated to high temperatures, but as previously stated milk pasteurized at low temperatures does not undergo any appreciable change.

It is often stated that pasteurization, even if it does destroy bacteria, does not destroy poisonous products of their growth. This can hardly be considered a real objection for if they are present in raw milk they must be consumed with it, and, if pasteurization does not destroy them, the pasteurized milk would be no worse than the raw milk.

The question as to whether or not pasteurization destroys beneficial enzymes is still an open one. In the light of our present knowledge of the enzymes in milk and the part they play in the digestive process it is quite impossible to settle the question of their importance. One point is evident, however, that the low temperatures now in use in pasteurization have little effect on the commonly recognized enzymes of milk.

The opponents of pasteurization have raised an objection on the ground of its indirect influence on the milk producer. It has been claimed that pasteurization would cause lax methods of production on the farm for the reason that farmers would know that the milk was to be pasteurized and, therefore, they could be careless in the production. This objection seems rather exaggerated and unimportant for in any city where there is any inspection of the raw-milk supply the same inspection can and should be continued even though the milk is to be pasteurized.

The process of pasteurization is by no means fool proof. It demands a knowledge on the part of the operator of a pasteurizing plant of the action of the process and its objects. Do all operators have such a knowledge? Undoubtedly they do not. Records of temperatures used in 231 milk plants, which were obtained by circular letters, showed that 99 per cent. of those which used the holder process pasteurized at proper temperature. Among those which used the flash process only 57 per cent. used the proper temperature, while the other 43 per cent. used temperatures too low to be effective in the destruction of pathogenic bacteria.

Any one who has had the opportunity to examine the numerous plants where pasteurization is practised has undoubtedly found cases where as

many bacteria were introduced during cooling and bottling as were destroyed by the heating process. It is in such cases that ignorance on the part of the operator of the fundamental principles of the process is most strikingly shown. One false step, such as running pasteurized milk through a dirty piece of cheese cloth before it enters the bottle filler, may undo all the previous work. Pasteurization is an added expense, and merely as a matter of business, after the process is properly performed, it is hard to believe that any one would wilfully allow the results to be spoiled by a single operation, no matter whether the object of the process was to produce a sanitary milk or merely to preserve it. The failure of a few plants to properly pasteurize is no reason for condemning the process of pasteurization. In such cases a little education will often produce marked improvement and enable the milk dealer to meet city regulations.

Regulations relating to pasteurized milk should be based only on accurate scientific data. It is often the practice to demand a bacterial reduction of 99 per cent. during pasteurization. It is an easy matter to destroy 99 per cent. of the bacteria in milk when the raw milk contains large numbers. It is often impossible, however, when raw milk contains around 100,000 bacteria per cubic centimeter to destroy 99 per cent. on account of heat-resistant bacteria which are not necessarily spore formers. In a large number of experiments in which we pasteurized milk under exact laboratory conditions, where no reinfection was possible, in one sample only 17 per cent. of the bacteria were destroyed. Often 99 per cent. of the bacteria may be destroyed and yet the pasteurized milk may still contain hundreds of thousands while in other cases where the milk contains only tens of thousands the percentage reduction may only have been from 80 to 90 per cent.

In the control of pasteurization it is essential that the proper temperature be used and that the process is so performed that no reinfection takes place. This can only be accomplished by direct supervision of milk plants by trained men who have authority to carry on such supervision. It is not the idea even of the most ardent exponents of pasteurization that any grade of milk should be pasteurized and consumed and that farm inspection can be eliminated. Filthy milk is not fit for human food under any condition and need not be tolerated.

In the present status of pasteurization the ideal to be achieved is to use the process not to make a dirty milk a clean milk but to make a clean milk a safe milk.

WHAT GOOD HOUSING MEANS.

JOHN IHLDER,
Field Secretary, National Housing Association.

Read by title, before the General Sessions, American Public Health Association, Colorado Springs, September, 1913.

The question of how we, individually and as communities, are to secure good houses has recently begun to attract national attention. As usual it began in a negative way with hot debates over certain details. Also, as was natural, it began with a study of the worst phase of our housing—the piled-up tenement dwellings of our largest cities. But during the past three years the growth of interest in housing has been so great that we can now cease to confine our attention to the worst housing abuses and begin to think of housing in a broader way as it concerns us all.

The rapid change in our point of view is evidenced by the change in housing legislation. Three years ago such legislation dealt almost exclusively with tenement houses or multiple dwellings. In some cities, as in Boston, a tenement house was defined as one that contained four or more families. Consequently only a small fraction of three-decker Boston was subject to regulation. In a larger number of cities the tenement house was defined as one that contained three or more families. This was the New York rule, and was copied by many other cities. In New York, and especially on Manhattan Island, the great barracks dwelling had become so common that the law safeguarded in a measure a very considerable proportion of the people. But even in New York, notably in Brooklyn and in the outlying districts, there were large areas where the tenement house had not yet appeared in any great numbers and where, consequently, housing was not regulated in the interest of the tenant or of the community. In the smaller cities which imitated New York's law the effect was scarcely noticeable.

The trouble was that we had permitted ourselves to believe the problem purely a problem of the tenements of the poor, that the need was adequately met if we saw to it that the barracks, which we assumed were the only dwellings that could be erected for the urban poor, were provided with certain minimums of light, air, water, toilet conveniences and safeguards against fire. Of course those who were working on the problem knew the falsity of this belief. When they came to impose minimum restrictions for tenements on the lower East Side of New York they found that these minimums were greater than the amounts given to the well-to-do in many expensive apartment houses. Fortunately it proved impracticable to

draw a legal distinction between the tenement house and the apartment house, so those of us who live in New York are sharing in the benefits of the poor.

But for all this the idea persisted that tenement house legislation was a boon from which the more fortunate members of the community—those who in popular phrase are "able to look out for themselves"—and the community as a whole benefited only indirectly if at all. Consequently recent laws, like that applying to the New York state cities of the second class, mark a tremendous development of our understanding. This law covers not only multiple dwellings but two family houses and private dwellings as well. And it covers not only buildings in which families are supposed to live more or less permanently, but also lodging houses, hotels, and other temporary shelters for the detached. This law will protect the merchant, the lawyer, the salaried man, even the city sanitarian and the health officer, and their families, against the development of evil conditions from which as individuals they would be powerless to escape—even though they do belong to a class which is mistakenly supposed to be able to look out for itself. When Manhattan became an island of tenements, many who are classed as well-to-do found that they were forced to live in tenements, and in such tenements as were provided for them, with gloomy, airless bedrooms, and dark, smelly kitchens. We like to think that we are free agents, but as a matter of fact we usually take what is handed to us. Our chief means of protection is to make the handers keep all their goods up to a wholesome standard.

So we have begun to realize that the problem of getting good houses is not merely a problem of the poor. It is not a problem of any one class, to be solved in a more or less superficial way and then forgotten. It is a problem that affects directly and vitally the whole community. Consequently it is essential that we stop looking at it from a purely professional point of view and take into consideration the human relationships that are involved.

There is some basis for the widespread distrust of the professional man. Experience seems to show that our custom of putting an amateur to boss a professional has its practical benefits. For if we give the professional all the rope he wants he is apt to hitch it to his own particular professional star—a proceeding sanctioned by high authority—and then climb clear out of sight of the multitude leaving practical problems unsolved.

There is the architect who is so interested in his elevations, in the placing of his windows so that they will compose properly when viewed from the street, that he quite forgets the people who are to live inside the house and make practical use of the windows. There is the builder whose attention is concentrated upon the capitalist, who thinks of houses only as revenue producers, entirely ignoring the people who are to pay the revenue.

Recently in Boston I met one of these builders. He was very indignant over the present agitation to secure laws that will make the Boston three-decker less of a fire hazard. Such legislation will, of course, decrease the number of three-deckers by increasing their cost. Incidentally it will probably increase the number of two-family and single-family houses. This to him seemed a wanton injury to the small investor. He cited the instance of a man for whom he is building a three-decker. This man was just able, under present conditions, to get enough capital for his enterprise. When it is finished he will have an apartment for himself and two to rent, so getting a good return on his investment. If the proposed law were enacted the man would have to be content with a two-family house. This, the builder thought, an unjustifiable invasion of the man's right to do as he would with his capital.

"Why," he explained, "I live on the third floor of a three-decker myself. I prefer it because I get better light and air up there."

Not until after he had said it did he realize that for every third-floor family there are two deprived of the light and air shut off by the third-floor apartment.

The health officer, the sanitarian and other scientists who serve the community are, perhaps, not subject to such comments as this, except when they are compelled to submit to political pressure. Their professional interests are more impersonal, they are not so greatly tempted to serve one class at the expense of another. But assuming this, can they do their full duty if they approach their work only from the professional standpoint? Is there not danger that the interest of professional problems, detailed technical problems, will blind them to larger human problems in the solution of which they can and should, by virtue of their offices, exert a great influence?

This is the day of the specialist, and because of the specialist we have made great advances. But also, because the specialist has tended to confine himself to his speciality, we have suffered some serious losses. The friendly, human attitude of the old-fashioned family physician was an asset that balanced a good deal of liability in the way of lack of technical knowledge. His title of "family doctor" is the key to much of his success. To him the world was not what it is coming to be in this age of obstetricians and baby specialists, when each process is presided over by a different man, a world of individuals. It was a world of families. This leaves a place to be filled, and by whom can it be better filled than by you whose interest is in the well-being of the whole community?

Yet as one reads over the titles of the papers submitted to this conference he feels that the community doctors cannot have fully realized the opportunity open to them. Here we have learned discussions on a multitude of technical details, but all treating mankind as an unrelated mass of indi-

viduals. And this though we all know that the community is not composed of so many thousand population except in the census returns and in the dreams of the Chamber of Commerce. It, or the only really important part of it, the part that brought us up from savagery, the part that carries our hope of a better civilization in the future, the part that holds us safe and secure in the present, is com, osed of families, of households.

It is important that we have a pure water supply, that we dispose of our garbage and rubbish in a sanitary manner, that the milk for the babies be clean and nourishing. And it is important that we learn from each other the latest and most scientific methods of bringing all these good things about. For it is important that we keep what we have. But it is not less important that we be able to get more than we have at present. It is a rule of life that we must either advance or retreat, we cannot stand still. And to get more we must make the conditions such as will encourage *production*, not merely miserly safeguarding. This means we must give attention to the family as the unit of society rather than concentrate our attention upon individuals.

We deal much in assumptions, necessarily, having only three score years and ten in which to reach our conclusions. But occasionally it is necessary to take up an old assumption and examine it. Most of our cities assumed until two or three years ago that they were cities of homes. Now they are examining that assumption and they find it needs revision. We have assumed—in spite of talk about easy divorce and the advisability of requiring a physical examination before marriage—that the American family was getting along famously. Is it? Are there not developing in our cities conditions that threaten the American family more than do easy divorce and venereal diseases? May it not even be that these conditions have something to do with the increase of divorce and the prevalence of venereal disease? The specialists in these two epidemics get an occasional glimpse at their causes. But are not you, who are so interested in keeping down the death rate, really in a better position than others to learn what keeps down the birth rate? And being in such a position should you not take advantage of it, and, having learned, use all your influence to prevent or to remove the causes?

Of course I am somewhat subject to the limitations of the specialist myself.. But it seems to me that my specialty throws at least a side-light on the problem. There is, I believe, as direct a connection between the kind of house a family lives in and the vitality of its family life as there is between a windowless bedroom and the physical condition of the individual who sleeps in that bedroom. Sociologists have begun to show a considerable interest in the effect of the house upon the family. Dr. Charles W. Eliot, president emeritus of Harvard, said:

"Bad housing is the fundamental evil in all cities, for it develops many

physical and moral evils. It is the main problem not only of large cities like Brooklyn, but of small cities like Cambridge. At this moment in Cambridge, three-family houses are being rapidly erected with not more land about them than is sufficient for passage on foot; and they are mostly of flimsy construction in wood. The rent of a flat in these houses is higher than that of an independent house with a garden was in Cambridge thirty years ago. This kind of dwelling obliges its occupants to have almost all their recreation outside the dwelling, in the streets, theatres, saloons, and other public places. An immense change in family life is consequently going on in all our urban population."

Observers in New York and in Philadelphia have noted that the small house of Philadelphia encourages a neighborliness that forms the basis of wholesome social relations between families, which is conspicuously lacking in tenement-house New York. Tenement parents and children make their friends as individuals not as members of families, and their companionship and amusement are sought on the street, not in the home. As the number of rooms grows smaller, as the size of the rooms diminishes, which they inevitably do in barracks construction, friends are crowded out, additions to the family crowded back. The very type of building tends to discourage any natural instinct for having children. In the apartment they are constantly under foot, in the halls they are a nuisance to neighbors who are neighbors by proximity only, on the street they choose their companions from a whole city full without let or guidance. The apartment is not in any sense a home, except in the primary one that it offers shelter from the elements. And in that it is better only in degree than the cave which sheltered our remote ancestors. All the customs and the sentiments that have grown up around the home since we began to build houses must be cast aside if we again seek refuge in cliff dwellings. And with the going of the home will go the old conception of the family.

I have a great faith in statistics. It began when I believed implicitly in a single statistic that I had dug out for myself. It persists now when I wait for the returns of the United States census—and sometimes find the waiting long. It leads me to seize with avidity upon such a statistical discovery as that of Dr. Walter F. Willcox of Cornell, that single men die more readily than married ones. For that is as it should be. It makes interesting the pages of long reports on hookworm which show the close connection between a certain phase of bad housing and disease. And it shows an underlying cause of the decreasing birth rate that at present is so alarming Germany, as France has been alarmed for more than a generation.

In Germany the professors of preventive medicine have scored many victories. As a result the death rate has fallen steadily. But like those of France they have failed to keep up the birth rate. Especially in the

larger cities, which like New York and Paris are cities of tenements, is the decrease notable. Statistics show that in Berlin the proportion of childless couples is increasing and that the two-child limit is becoming the normal thing. And this just at a time when we had begun to hope that we could make our cities self-perpetuating. No longer were we to admit with humiliation that the city, which is the center of civilization, destroys those who make it glorious. We prophesied that the time was at hand when the city would be so sanitary that no longer would it be necessary to draw upon the country for raw recruits to take the places of vanished city families. And just as we were about to proclaim our triumph, we find that the fight is still far from won.

We have done great things, and in the doing of them have created a new profession, that of preventive medicine. Since the days when the physician was content to cure those already sick to these days when the physician, whatever his technical titles, labors to keep men from becoming sick, we have advanced far. But perhaps the time has now come when we must create another profession, that of "constructive medicine." Its field may be even larger than the field of preventive medicine, the multitude of its practitioners divided into a greater number of groups than those who now guard our food, our water, our air and our neighbors from infection and contagion. And one of its tasks will be to see that our houses are adapted to serve as family homes. For that is what good housing means.

What we have won in the long fight to make our living conditions more sanitary, we must keep. And as our cities still have thousands of windowless rooms, hundred of thousands of disease-spreading privy vaults, we must add much to what we have already won. But at the same time we must bear in mind that a house, even if it is superlatively sanitary, may not be a good home, and so be on the alert to check bad types, to encourage good types of houses. Otherwise the day may come when, our preventive work successfully finished, we shall look about us and see a race that perishes, though without disease.

Then we may understand the feelings of the Mobile darky of whom I heard last winter. He was about to be hanged. Before letting him fall the sheriff, who was a tender-hearted man, said, "George, would you like to say a few last words befo' I let you go?" "Yass, sah, yaas Mist. Sheriff, I would like to say a few last words," replied George, "Ah'd jest lake to say that this curtainly will be a lesson to me."

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IMPORTANT ANNOUNCEMENT.

At a joint meeting of the Committee of Seven and the Committee on Journal of the American Public Health Association held in New York, December 27, Dr. Livingston Farrand tendered his resignations as Treasurer of the Association, and Editor of the JOURNAL. Doctor Farrand has accepted the Presidency of the University of Colorado, thus making it necessary for him to relinquish his various offices. His resignations were received with deep regret and with sincere appreciation for his untiring efforts on behalf of the JOURNAL and of the Association. Members of the Association and subscribers to the JOURNAL will unite in wishing Doctor Farrand a splendid success in his new endeavors.

The Committee of Seven is glad to report that Dr. Lee K. Frankel of New York City has kindly consented to fill Doctor Farrand's unexpired term as Treasurer.

New arrangements have become necessary in regard to the management of the JOURNAL and Prof. Selskar M. Gunn, who has served as Managing Editor for the past two years, has been asked to undertake full editorial duties, and to transfer the business management of the JOURNAL to the Boston office. This he has agreed to do and hereafter all communications with regard to the JOURNAL should be addressed to the Boston office, 755 Boylston Street, which is also Professor Gunn's address as Secretary of the American Public Health Association. This centralization of the JOURNAL and Association activities will result in economies and in increased efficiency. With this issue of the JOURNAL Dr. Philip P. Jacobs, who has so faithfully and energetically served as Business Manager, will conclude his services in order to take up additional duties in connection with the National Association for the Study and Prevention of Tuberculosis. Dr. Henry L. Mann of Boston, who has been connected with the business management of the *Atlantic Monthly*, has been chosen to take Doctor Jacobs' place. His address will also be 755 Boylston Street, Boston, Mass.

A board of Advisory Editors has been established and the following gentlemen have consented to serve in this capacity: Dr. William C. Woodward, Washington, D. C., Dr. Charles V. Chapin, Providence, R. I., Dr. Peter H. Bryce, Ottawa, Canada, Dr. Livingston Farrand, Boulder, Colo., and Prof. George C. Whipple, Cambridge, Mass.

The Committee on Journal bespeaks the continued active support and interest of all subscribers to the JOURNAL, and believes that the JOURNAL is serving a very useful purpose in regularly reaching an ever-increasing number of men and women interested in, and working for, the promotion and advancement of public health knowledge. This JOURNAL should be self-supporting, and the only way in which this can be brought about is through the continued growth of the subscription list. Are there not individuals in your community who would be interested in, and glad to subscribe to the JOURNAL were their attention drawn to it? We believe there are. We need your coöperation. May we have it?

Advertisers, subscribers, and all others having business with the Journal are requested to note the change of address. Please be sure that this change is made on your books. All communications hereafter, should be addressed to 755 Boylston Street, Boston, Mass. Make this correction now!

DRUG ADDICTIONS, A PUBLIC HEALTH PROBLEM.

DR. C. E. TERRY,
City Health Officer, Jacksonville, Fla.

Read before the Section of Public Health Officials, American Public Health Association, Colorado Springs, September, 1913.

Were the province of health conservation still limited to the control of obvious contagion, or could we deal with the immediate alone and yet hope to attain ultimate success as sanitarians, this paper would require an apology if, indeed, it were permitted a place upon your program. The etiology of public maladies, however, is daily presenting a more complex study, and factors, other than those known to be specific, are assuming more important relationships to their onset and course.

We find that the control of tuberculosis leads us far behind the careless disposition of sputum or the fumigation of infected apartments, to conditions of housing, of labor, personal and domestic hygiene and ultimately to the gnarled limb of the family tree where, the eugenist tells us, was first made an improper selection. With whatever infection or insanitary problem we may concern ourselves, there are interwoven, in most instances, a mass of predisposing factors which have a more or less direct bearing upon the matter in hand, and no one of which may be long ignored without discomfiture.

As a potent social and economic cause leading to much of our public sickness and inefficiency, I would present some facts relating to habit-forming drugs. In investigating this community ailment I have endeavored to relate, as far as possible, the various causative factors with the conditions found and their control.

The obtaining of accurate or complete data concerning the use of opiates is not without practical difficulties. These habits are more carefully concealed even than the existence of venereal infection and, fostered as they are by the cupidity of a considerable class, ordinary methods of investigation are of little use. Rumors and fragmentary information reaching me from time to time indicated certain channels of supply and the necessity of some well enforced regulation at once prohibitory and provisionary became evident. Our state law is entirely inadequate and a revelation of its weakness, made through some prosecutions undertaken by the State Pharmaceutical Association, which all resulted in *nol prosses*, indicated the need of a more comprehensive and quick-acting law.

In August, 1912, the City Council passed, at my request, an ordinance regulating the sale of certain drugs, those commonly employed by habitues,

opium and its derivatives, cocaine, eucaine, etc. This bill in general resembled those in operation elsewhere, requiring a written prescription from a practising physician, prohibiting refilling and demanding that a record of sales be kept by druggists. Further it required that each prescription bear the name and address of the individual for whom it was intended and that a true copy of any prescription containing more than a specified amount of the drug named be sent, by the physician, to the office of the health department. Granting that sales would be made only on prescription this provision was intended to discover the number and location of users and also what class of physicians would, for the most part, lend their services to the fostering of these habits.

Another section provided that habitual users could obtain, free of charge, prescriptions for the drugs named from the health officer providing he might deem it advisable to issue them. It might seem, at first sight, anomalous that a bill aimed to curtail the sale of certain drugs should provide for the furnishing of gratuitous prescriptions by the health department. This provision, however, was the keynote of the whole bill, its intent being, first, to remove any shadow of an excuse for an illegal sale by a druggist, on the plea, frequently made, that the purchaser, an habitual user requiring a supply, was unable to pay for a prescription, and second to bring the health officer into personal contact with the unfortunates addicted to drug habits. Indeed, without this provision, little, if any, of the data given below could have been obtained.

The bill further provides for the separate filing of all such prescriptions by the druggist and the keeping of a book record of those filled, together with the names and addresses of the purchasers and the physicians writing them, this record to be at all times open to inspection by the health and police departments. The finding of these drugs in the possession of anyone other than a druggist or physician was made a misdemeanor, except the possessor could show that he came into such possession in accordance with the provisions of the ordinance.

Before this bill was submitted to the council, it was discussed nd approved, section by section, by the local medical society and bc. ore its passage a public hearing was held to which the wholesale and retail druggist were invited to criticize it and make suggestions. After its passage, a few druggists chose to consider its requirements not essential to their business; these were promptly prosecuted and received the "limit" at the hands of the municipal judge. After these occurrences it became extremely difficult to obtain, in Jacksonville, any of the habit-forming drugs except through the authorized channels. Physicians and druggists were all notified and furnished copies of the bill and, except for an occasional violation, the ordinance has been in coaplete operation for a year at the present writing.

I have kept card records of all cases obtained through duplicate prescriptions sent in by physicians and of those coming in person to the office. These cards are kept on file and each prescription given by me or received in duplicate is entered with the date. A total of 646 users have thus been recorded together with the drug or combination of drugs used, the amounts and the physicians prescribing them.

This number represents, with considerable accuracy, the number of users in the city, about 1 per cent. of our population. Some of those recorded were transients and are not now in the city, but these are offset by a number who obtain their supply by mail from other places and a few who, I have good grounds for believing, are furnished directly by physicians in order to avoid my records.

These 646 users are divided into:

White,	416	males,	167		
		females,	249		males, 266
				or	
Negroes,	230	males,	99		females, 380
		females,	131		

Our population is composed about equally of whites and colored so that it is seen that, with us at least, the whites are far more prone to drug addictions than the blacks. Our white population is more cosmopolitan than that in most cities of the far South and I believe, judging from that fact and from the types seen, that the prevalence of drug habits among the whites would average about the same as elsewhere. In a community, however, which lacks our large negro element, the extent of drug habits, as regards the total population, would probably be greater than with us.

Divided according to single drugs used we find that morphine leads with a total of 241 or 37.6 per cent.; cocaine is next with 173 or 26.7 per cent., then laudanum, 122 or 18.8 per cent., heroin, 29 or 4.4 per cent., and gum opium, 14 or 2.2 per cent.; to these must be added those who use a combination of cocaine with some opium derivative. Of these there are 67 or 10.3 per cent. of the whole.

Of those using a combination of cocaine with some derivative of opium, the whites far exceed the negroes, probably because of greater knowledge as well as owing to the increased cost. By sexes, the white males outnumber the females two to one while the colored females outnumber the males nearly four to one as combination users. This, I think, is explainable by the fact that, as a rule, those using the combined drugs are of the most depraved class of whites, both male and female, and the colored women are in closer contact with this class of users than are the men,

many of them being employed as domestics in the restricted districts where so many of the white cocaine and morphine combination users are found.

The two races show a decided difference in their selection of drugs. Of the whites 81.9 per cent. use true opiates alone and 18.1 per cent. only cocaine while of the negro users 49.5 per cent. are addicted to the true opiates and 50.5 per cent. to the more stimulating cocaine.

In both races the female users outnumber the males 58.8 per cent. to 41.2 per cent. while, as might be expected, the largest proportion of true opiates users, 66.5 per cent., are found among the women and of cocaine users 54.3 per cent. among the men.

With 213 drug habitues, or roughly one third of those recorded, I have come in personal contact and have obtained from them more or less complete histories as to age, duration of habit, occupation, income, social state and factors leading to the formation of their habits. From these histories it would appear that the age period which furnishes the largest number of users for any period of similar length is that from twenty-five to thirty-five years. This period furnishes 47.5 per cent. of all users. In the first half the males predominate slightly, in the second half the females predominate quite markedly.

From the average age of the individuals and the duration of their habits when first seen, I find that the average age of beginning is 26.1 years for males and 27.4 years for females, the women starting fifteen months later in life than the men. The average age of beginning for both sexes is 26.7 years. As the ages of users advance the proportion of females increase relatively. Whether this is because the exigencies of life with the male render his cure or early death more certain, or whether the later period at which the female user is created affects this apparent greater longevity, are questions which, with many others pertinent to the subject, remain yet to be answered.

A further study of these histories brings to light information of real value as relating to the causes, both direct and indirect, which appear responsible for the creation of the user. In this connection I will state that these histories are seldom obtained during the first visit or two of the user to my office but rather after repeated visits and kindly treatment have served to establish more or less confidential relations. It may be said that mendacity is a common attribute of the drug fiend and that information so obtained is not reliable. I can only state that from the beginning I have tried to encourage their trust in every way; that much of what I have recorded has come unasked and little by little at different visits; that my contact with individuals has been almost daily, and that the quite evident frankness of many who admit dissipation and evil ways, as entirely responsible for their condition, leaves no good reason for doubting

those who, with equal frankness and for the most part without rancor, place this responsibility on others.

As direct causes of drug-habit formation, I have divided these 213 histories as follows in the order of their frequency:

Through physicians' prescriptions or treatment personally administered	54.8%
Through the advice of acquaintances (for the most part themselves users)	21.6%
Through dissipation and evil companions	21.2%
Through chronic and incurable disease	2.4%

The last named cause is accounted for by three cases of chronic asthma, one of arthritis deformans and one of intestinal carcinoma. They require no comment.

The 21.2 per cent. who acquired their habit through dissipation need not be considered for the moment; they represent probably a class who, had the narcotic not been available, would have satisfied their desire for excesses in some other way, in fact many of them are alcoholics or worse and general measures of control would largely cover them.

The next largest class, 21.6 per cent., who acquired their habit through the advice of friends and acquaintances may be considered as closely related to the largest class of all. By acquaintance I mean, not vicious companions, but individuals who, themselves physical sufferers, have in some way become addicted and thoughtlessly pass on to another their dangerous knowledge, unmindful of its probable result.

With this class of individuals and that largest class of all, the 54.8 per cent. who owe their unfortunate condition to the offices of the medical man, are we most concerned as public health officials. It may seem a strong statement to make that over 50 per cent. of drug users owe their habit to the medical profession, and yet I am convinced that my figures are not far wrong. In order to more fully appreciate the probable truth of this assertion I have endeavored to present, in the following tabulation, further details where individuals have placed the responsibility for their habit upon their attending physician. I have determined, as accurately as possible, the ailment for the relief of which an opiate was prescribed. In 115 cases the following conditions were designated:

Rheumatism (acute articular, gonorrheal and luetic)	30	26.0%
Accident and operations	29	25.2%
Protracted illness (undefined, some apparently neurotic)	18	15.7%
Pelvic trouble (inflammatory)	14	12.2%
Neuralgia (mostly facial, two or three sciatic)	11	9.6%
Headaches (undefined)	4	3.5%

Asthma	3	2.6%
Malaria	3	2.6%
"Nervous Prostration"	3	2.6%

In reviewing these conditions it is worthy of note that the majority of them are protracted, chronic or recurrent in nature. It would appear, however, that "accidents and operations" had claimed more than their share of victims, inasmuch as they are surgical conditions, for the most part of short duration and ending in permanent relief. Indeed, if the statements made to me are true, the number of this class occurring in hospitals is without excuse in good practice. In none of these conditions does an opiate accomplish more than temporary relief of pain, with the exception of the three asthmatic cases where a more or less specific effect might be claimed. It is also worthy of note that, in *every one* of these cases, the condition for which the drug was originally given had long since disappeared, the habit alone remaining in testimony to its one-time existence.

Here were 112 men and women become confirmed drug habitues through the judgment of as many physicians who elected to submit their patients to this risk, in order to relieve varying degrees of pain caused by conditions which, for the most part, were in no way permanently benefited by the administration of an opiate, no small number of which were amenable to surgical interference or other well-recognized treatment, and where, in some instances, opiates, by every rule of intelligent practice, were distinctly contra indicated! Surely here were assumed, in view of subsequent events, responsibilities too heavy to be lightly borne.

In many instances these first doses were not given at the bedside to allay severe pain, but handed out to office patients with apparently as little concern as a dose of calomel. Codeine, morphine, heroin and laudanum are all thus passed over to the temporary sufferer; the neurotic woman with obscure symptoms, the young mechanic with a broken arm, the over-tired business man; to young and old, it matters not, who chance to stray into the wrong office and who pay the price of their evil choice years after their faces are forgotten and their fees spent by the "expert" who so readily relieved their symptoms. Not only are these drugs carelessly prescribed but we find many repeated orders to "refill the prescription and then let me hear from you," the patient in entire ignorance, not infrequently learning for the first time from another physician or a conscientious druggist the nature of the "remedy" in which they have been placing their hope of cure.

Not infrequently is the refilling done without the knowledge or advice of the physician, who, were the opportunity given him might seek to cover his mistake, and equally responsible is the druggist who, in full knowledge

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of their danger, refills such prescriptions as often as requested. In some instances this is done through a mistaken conception of professional ethics, through an ill-advised hesitancy to call upon the physician for advice; in others through indifference equal to his and in all too many, to avoid losing the trade of one who, experience has shown, will be a constant and remunerative customer. For the past year morphine has been selling by the jobber at an average price of about sixty-five cents a drachm and cocaine at about fifty cents. The usual price paid by habitual users is $1.25 for original drachm bottles, a profit of one hundred per cent.

Some druggists, whose trade of this nature is large, sacrifice these commodities for $1 a bottle contenting themselves with a profit of from only forty to fifty per cent. For sales in smaller quantities, however, a much greater return is obtained. The poor devil with only a quarter, draws seven grains of cocaine, a rate of over $2 a drachm, and one druggist of my acquaintance, doing a lucrative business in "dope," sold four and a half grains of cocaine, adulterated with acetanilid, to a negro woman upon a request for fifty cents' worth, an "earning" of over twelve hundred per cent. Unfortunately this too small package was handed to a user in my employ and, without the formality of a physician's prescription, the vendor's profits receiving a rude offset the next morning in the shape of a hundred dollar fine.

Of those habitues, acquiring their habits through first trying these drugs on the advice of some acquaintance, it is probable that but few would have become chronic users had they lived in communities where laws restricting the sale of opiates, except upon prescriptions, existed and were enforced. The same may be said of many acquiring the desire first through a physician's prescription and of nearly all that began through dissipation, so that we find two principal etiologic factors at work, careless prescribing and improper sales by druggists. I have heard it stated that various patent nostrums were frequently responsible for the creating of drug addicts and it would seem a reasonable hypothesis. It so happens, however, that I have not personally come in contact with any such cases, and am, therefore, not prepared to comment on this aspect of the situation.

One other method which I have included under the general heading "Advice of Friends" deserves separate mention; those who were deliberately induced to try this or that drug by some old user, in order that he might, through these new victims, provide a supply of the drug for himself. In my series of cases this is seen most frequently among those using cocaine and some opium derivative, usually heroin. Indeed, there seem to be no depths to which some of these "combination" users will not descend in order to acquire sufficient funds to provide themselves with the means for existence. We have discovered a number of these "peddlers" who buy one or two drachms at a time and dispense their wares to others, less gifted

with business acumen, at from fifteen to twenty-five cents a dose. No especially difficult problems are presented by this class of offenders as their detection is simply a matter of a little time and patience.

Much more might be told of the sordid details of this drug sickness that is to be found in every community, instances of malpractice of a peculiarly aggravated nature; of physicians who, for a fee of twenty-five or fifty cents, will write a prescription for any amount of any drug without making an effort to discover if the purchaser be really an habitual user. I could name all too many such in my own city and can prove such statements by most carefully obtained and recorded evidence; of druggists whose chief income is derived from the usurious profits of dope sales.

The points, however, which I wish especially to make are, first, the necessity of securing accurate data in each community as to the prevalence of drug habits. I am convinced that, in spite of all that has been said and written of this evil that few public officials are aware of the actual facts. The only persons who really know them are the druggists who cater to this trade and the users themselves. Obviously neither party will supply the information unbidden.

A survey of the true conditions should be conducted and the findings made a matter of public record and information. Not improbably some better method than mine will be devised, one less burdensome is certainly desirable in large communities.

Second, whatever corrective legislation be enacted must take full cognizance of the practising physician as a factor of prime importance in the formation of drug users and not content itself with restrictions thrown around the druggist. The New York state cocaine law recently passed is, I believe, the best as yet devised, but does not cover opium derivatives.

Third, any effective prohibitive legislation must provide for the free treatment of existing users. To deprive them of their supply alone would be inhuman; private institutional treatment is beyond the reach of all but comparatively few, a circumstance probably more fortunate than otherwise, in view of the methods of most such places, and they should be considered a public charge for at least one rational course of treatment.

The state of Iowa has made such provision at Knoxville where dipsomaniacs and drug habitues are received and treated. Commitment is had through application made to the judge of the district court in person by the user or by his family. The third biennial report of this institution prepared by the superintendent, Dr. H. S. Miner, is a most interesting and instructive document—the scheme of conduction of the institution would appear to be a model one which other states might adopt with advantage.

Doctor Miner's tabulations include alcoholics with narcotic drug users so that I am not able to compare my figures with his. He reports 42.44

per cent. of new commitments, as showing satisfactory results after discharge, and comments on the increasing number of voluntary commitments. I am convinced that a very large percentage of my cases would avail themselves of such institutional treatment were it obtainable with us. Many of them have already spent considerable sums in various private institutions and for the so-called "home treatments" so attractively advertised in our daily press. Where one is fortunate enough to fall into honest hands, scores spend their earnings fruitlessly and the only solution would appear to be the public institution.

In conclusion, it seems to me that the whole subject is one which may best be handled by health authorities, municipal, state and Federal. For the most part its control has been left to the police departments and violators of existing drug laws are spasmodically prosecuted, whenever chance or some too flagrant act brings the matter to their attention. In most communities the time of the police department is fully occupied with other matters nor should they be expected to possess such a realization of the profound importance of this subject as must precede and accompany any successful effort at control.

Some months ago I submitted the matter of state institutions and control by health authorities to about forty state and municipal health officials. The replies, for the most part, were to the effect that public institutions were needed and that the problem was one which legitimately belonged to health departments.

I believe that few of those confronting us affect more seriously the public health than this of drug addictions. It directly and indirectly increases the death rate and lowers the birth rate of every civilized community. It closely resembles, in its dissemination, contact infection of disease; in one neighborhood nearly all the users will be addicted to one drug while in another section some other drug will be the favorite. Knowing the address of the applicant, I could prescribe correctly for over fifty per cent. of the users in my city.

We concern ourselves, quite rightly, with other preventable conditions, quarantine our scarlet fever and diphtheria, trace with zeal our typhoid cooks, and tabulate with regret each death from these causes, feeling even some measure of responsibility in their occurrence; yet contributory to how many such records, to our deaths from pneumonia, tuberculosis, our still-births and suicides might be stated, were the truth known, "drug addiction." The social misery, the inefficiency and communal depletion resulting from this civic malady, may not be properly realized by one who has not seen for himself this pitiful array of wrecks waiting, as in a breadline, for the free dope prescription, wives fearful lest their husbands discover their condition; fathers and mothers hiding by every artifice, a stimulated cunning may devise, their habit from their own children; young men

and women asking in a whisper for a fifty-cent prescription for "coke," a vicious circle of carelessness, ignorance and cupidity involving a responsibility that has been shifted from shoulder to shoulder until no one seems willing to admit it, yet intimately associated with the public welfare, and health conservation and deserving of most careful investigation and expert treatment.

DISPOSAL OF MANURE.

P. M. Hall,

Minneapolis, Minn.

Read before the Section of Public Health Officials, American Public Health Association, Colorado Springs, September, 1913.

In the disposal of manure the cities have thus far shown little progress beyond village methods. Most of the ordinances read provide for some kind of floor construction; for the construction and use of pits, bins or boxes, more or less water tight, with or without sewer connections, screened or unscreened; for the systematic removal at certain definite intervals, varying with the season of the year; et cetera.

That there has been so little progress in the handling of this waste product seems strange, when the fact of its fly-breeding propensities are now almost universally known and accepted, and the dangers of the house and stable fly as carriers of disease so well recognized and received. We have not progressed beyond the consideration of its being a common nuisance, from the odors which arise when it is accumulated or kept in bulk. The dangers from fly breeding have received only such recognition as the purely academic one of making mention of screening the boxes or bins in our ordinances, to let folks know that we are up to date in our scientific knowledge.

In procuring the information for this paper, letters were written to all the principal cities of the United States. The methods were found to be so similar that the reports of only seven cities are here given, as that number will give a sufficient index of what the others are doing.

In Minneapolis, the manure is disposed of through the winter months by the voluntary collection of market gardeners and farmers, but, as soon as spring work opens up, the collection of manure in the city is sadly neglected. Several years ago an ordinance was passed, permitting private collectors between April 1 and October 1 each year to collect manure and charge the horse owner a fee of 50 cents per month per animal. All of the known private haulers in the city, together with the regular scavenger companies, were notified and furnished with copies of the ordinance and for the first year the collecting was fairly well done.

The one great difficulty to contend with was that the collectors found no sale for it, as the farmers and market gardeners did not want it at that time of year and objection was made to its being stored anywhere. The ordinance had the usual requirements of keeping manure in a watertight, screened box; that it should be collected at least once a week between April 1 and October 1; that those hauling it should be careful that there should be no spilling on the street, etc. The ordinance is still in existence and has not been superseded by a new one. It is indifferently enforced.

The reports of the various cities follow:

Washington, D. C.

The law in force in the District of Columbia requires every person owning or occupying a building within the more densely populated parts of the district, where one or more horses, mules or cows are kept, to maintain in connection therewith a bin or pit for the reception of manure pending its removal from the premises. These bins or pits must be flytight and watertight. The manure must be removed from the premises twice a week between June 1 and October 31, and at least once a week between November 1 and May 31. The manure when transported over the highways of the densely populated parts of the district must be in tight vehicles which, if not enclosed, must be so covered as to prevent the dropping of manure. The methods for collecting the manure from these bins or pits is not uniform, it being the duty of the occupant of the stable to arrange for the removal of the manure. There are in the district six or more companies that deal in manure. Wagons are maintained by them; in some instances exclusively for the collection of manure, in others they are used also in other branches of their business. These wagons collect from the manure bins or pits and convey the manure either to the railroad stations for shipment or directly to the property of the person purchasing it. In many instances these companies pay to those in charge of the stables a small amount for the privilege of obtaining the manure. Some of the farmers residing within the immediate vicinity of Washington collect manure from the stables of the city during certain months of the year. This service, however, has proved unsatisfactory in that the farmers do not call for the manure during the growing season because of the demand for their teams in other work on the farm. The manure from the stables under the control of the municipality is used on the grounds of the municipal workhouse and almshouse and on some of the city's parks.

Toronto, Can.

The city has contracts with four different companies for the removal of all manure, which has to be removed from all premises at least once every week. The department of health requires manure to be kept in watertight, flyproof bins or receptables. If these manure bins extend below the level of the ground, they are required to be constructed of concrete, and connected by a trap to the common sewer on the street.

The companies make a nominal charge to the different stables, etc., for the removal of manure, the department of health insisting on this regular removal. There is, therefore, no cost on the department in connection with this portion of the city's waste.

Jersey City, N. J.

All manure is carted away by private contractors, its storage not being allowed in the city. Most of it is sold to farmers for fertilizing purposes.

Richmond, Va.

According to Richmond's health commissioner, Dr. E. C. Levy, more trouble in Richmond in connection with the removal of manure is encountered with the small private stables than with the large livery stables. The latter are able to make contracts for the removal of manure throughout the year, while the small stable owner is not able to do so, and finds the greatest difficulty in getting manure removed during the summer months—the very time when its removal is most important.

Methods of dealing with this problem are now being considered. In the opinion of Doctor Levy, the city itself should be prepared to remove manure from stables when the owner or occupant fails to do so in accordance with the law. Every horse owner should, of course, be allowed to sell his manure if he can do so and in doing so comply with the law; otherwise horse manure should be regarded as a nuisance, and the city, it would seem, would then have a perfect right to come in and remove the manure without compensating the owner and, indeed, going further and charging the owner for the service, if this be found necessary.

Rochester, N. Y.

The city does not collect or dispose of manure. It is considered a by-product which the stable keepers sell to the local farmers. "Personally," writes Dr. Joseph Roby, "I cannot see that it has any particular bearing upon the public health, except so far as the manure pits are breeders of flies."

Denver, Col.

The present method of manure disposal in Denver consists of transferring it to the city dumps where it is held during the summer months and in the spring sold to market gardeners. The chief sanitary inspector of the department writes that the service lacks much of being satisfactory, and that the methods will probably be improved in the near future.

Columbus, Ohio.

Columbus collects manure from any stable within the city limits on payment of a moderate fee. This then is disposed of by sale to farmers or other parties desiring to use the same as fertilizer. All stable owners in the city are required to keep manure in tight boxes and have the same removed at regular intervals, whether by the city or private individuals. The charge made to the stable owner is very nominal and does not meet the entire cost of collection, which is about $12,000 per year. "This system has not been in effect any great length of time," writes the acting superintendent of sanitation, F. M. Hoffman, "so we are unable to give any exact observation on its bearing toward public health, but will say that a great many old nuisances have been cleaned up thereby."

The city has also been shipping manure to land owned by the city which

is being cultivated by workhouse prisoners, during the period when there is the least demand for manure.

Quoting from "Reports on Collection and Disposal of Refuse and Garbage" of the Columbus department of public service:

"Previous to April 1, 1912, the city collected free of charge all the manure from the different stables. On February 13, 1912, the council passed Ordinance No. 26245 to regulate the collection of manure. This ordinance provided that if any person or persons desired to have the manure removed from stable or stables, they would be compelled to take out a permit for such service at a yearly charge of $3 for one horse; $5 for two, and $1 for each additional horse. After the ordinance became a law, the department commenced to notify the public that from and after April 1, 1912, no manure would be removed without payment of the fee. Since that date the owners of 976 horses have paid $1,665 to the city treasurer.

"The sale of manure is a perplexing problem. Between September 1 and June 1, the demand for manure is greatly in excess of the supply, and the city could sell three or four times as much as is collected. June 1 to September 1, there is practically no demand as the farmers cannot handle it during that time. There should be some method devised to store the manure during this period, when by order of the board of health we are prohibited from holding manure within the city awaiting the marketing period. The manure we were ordered to dispose of at once this summer had to be given away at a loss of $750 to the city.

"The price received for manure is $1.50 for a wagon load; $7.50 for a thirty-ton car; $10 for a forty-ton; $12.50 for a fifty-ton. These prices are based on coal cars of these capacities, and do not mean these cars hold that much manure. The sale of manure collected (130 car loads and balance by the wagon load) gave the city a revenue of $4,106.85.

"The collection of manure is made under the following rules: Whenever a person or persons pay to the city treasurer the ordinance charge for manure collection, the department is notified of same on a blank form. The name, address, permit number and number of horses are recorded in alphabetical order.

"Each driver (four being used in the collection) is given a separate list of barns to collect from, and each evening reports the places collected from. The date of each collection is noted in the office record by the clerk. By this method the department is always able to show the date of every collection from each place and to see that collections are made as frequent as necessary."

A detailed statement of the cost of collection and the receipts from the sale of manure collected, follows:

Total number of loads collected (year 1912)	3,720
Total number of tons	7,440
Total number of yards	18,600

Cost of teams and labor	$7,625 58
Superintendent, inspection	318 82
Repairs and miscellaneous	205 70

Receipts From Sale of Manure.

Cash paid to city treasurer	$4,081 35
Cash on hand December 31, 1912	15 00
Open accounts on book for year 1912	10 50
Sale of manure permits	1,664 00
Total	$5,770 58
Total operating cost	$8,150 10
Total receipts	5,770 85
Net cost	$2,379 25
Cost of collection, per load	$2 19
Cost of collection, per load, receipts deducted	64
Cost of collection, per ton	1 10
Cost of collection, per ton, receipts deducted	32

In Winnipeg, Edmonton and other Canadian cities there is no demand for manure as a fertilizer. The manure, therefore, is incinerated, but how successfully and what cost we have not the figures at present to state.

This gives a general idea of the method of handling manure in cities. No city seems to have developed anything new with the exception of Columbus, Ohio. There the new departure, although in operation only about a year, has proved fairly successful. The plan seems to be right. Manure, being an excellent fertilizer, should be returned to the soil. Being an excellent fertilizer and of some value it should at least return the cost of collection. We have hardly reached the point in the collection of city waste where the cost of collecting manure should be made a charge upon the general public. While the general public will be benefited by a thorough removal, yet the keeping and storing of manure should be classed as a nuisance and as such the cost of its removal should be a charge upon the horse owner. Even as it is, about one third of the manure produced in cities is removed at public expense with the street sweepings.

It may be possible that some new biological knowledge of the breeding habits of the fly may lead up to new methods in disposal. Through the investigations of Doctor Levy of Richmond we have learned a great deal that is new along that line. The fact remains, however, that so long as manure has to do with the breeding of flies it is a menace to the public health.

This paper is offered as a subject for discussion in the hope that something more definite regarding proper manure disposal may be evolved.

CONTROL OF COMMUNICABLE DISEASES.

DR. P. S. SCHENCK,
Health Commissioner, Norfolk, Va.

Read before the Section of Public Health Officials, American Public Health Association, Colorado Springs, September, 1913.

It is the intention of the writer to deal in this paper with the chief obstacles that stand in the way of the control of communicable diseases. While there has been a great change and at the same time great progress made in the last decade in the knowledge, management, control and prevention of this class of diseases, the science of bacteriology and the subservient sciences in the domain of chemistry, physics and the various branches of biology having furnished the "sinews of war," yet much remains to learn, and a number of potential factors still stand in the way of that Utopian period in the mind of the great Pasteur when he said that "It is in the power of man to rid himself of every infectious disease." While this proclamation seemed theoretically true at the time that it was made and is perhaps theoretically true today, still great and almost insurmountable and inconquerable obstacles stand blocking the way against the practical consummation of this end. Typhoid fever, typhus fever, diphtheria, smallpox, scarlet fever, tuberculosis, malaria, rabies, wound infection, cancer, erysipelas, measles and nearly if not all of the contagious and infectious diseases that are engaging our attention today were doing the same thing in the days of Hypocrates and Galen and the doctors in the period of the Pharaohs were battling with them as we at the present century—and during all these thousands of years we have not been able to conquer them. We have been able, however, during the past few decades to prevent many cases of communicable disease through our knowledge of their cause and means of transmission.

Pasteur, great scientist though he was, did not realize and was not aware of the existence of several conditions that a wider and better knowledge and experience in the domain of contagion and infection has demonstrated, and are now known to be prime factors against the consummation of this end. Simon in a very recent work, from which I have already quoted, is even stronger in his statement than Pasteur and says that "we have learned to prevent many diseases by the elimination of the corresponding infecting agents in our midst. Cholera, plague, typhus and typhoid fever, yellow fever, smallpox, malaria, diphtheria and other diseases of this class which, if they still exist among civilized people, do so

with the consent of the people in the face of a full knowledge of the manner of their prevention." This statement is in full accord with the enunciation of Pasteur, and again I say that while both are theoretically true still there are almost insurmountable obstacles to this end, inasmuch as it is practically impossible to search out and locate the carrier, the missed and so-called unrecognized cases, and yet we must find some means of doing this before we can hope to control this class of diseases. To know the cause of a transmissible disease is of inestimable importance—to know the intermediary host and the mode of transmission from patient to victim is of greater moment still; to know both, the cause and the mode of transmission, ought to put us in a position to absolutely control these diseases by carrying out a rigid system of isolation, quarantine, disinfection of discharge, etc., and so it would if it were not for several very serious complications which seem to be beyond our control at the present time.

The first of these complications in importance are the carriers and missed or undiagnosed cases already referred to—cases in which we, knowing the cause of the disease, are not able to locate or control the host, the distributor. This condition is best illustrated in diphtheria, typhoid fever, cerebro-spinal fever and to a less extent in scarlet fever, whooping cough, pneumonia, and perhaps several other diseases where the germs are harbored and distributed and no one the wiser. Who can point these carriers out? What practical method have we for their detection? It is obviously impractical to take cultures from each of a city's population. What then is the remedy? The magnitude of the proposition is apparent when we take in consideration as far as diphtheria is concerned, and it was in diphtheria that the carrier was first discovered. It is estimated that 25 per cent. of the attendants upon diphtheria cases harbor the bacilli, 25 per cent. of the family who have been exposed carry the germs, although they may give no manifestation of the disease. In schools in which diphtheria has prevailed among the children to any extent from 8 to 10 per cent. carry the germs. In the tenement and crowded districts, particularly of the large cities, it has been demonstrated that about 10 per cent. of the children are carriers. In cultures taken from school children, when diphtheria is not prevailing, 2 per cent. have been found to be carriers and about 5 per cent. of all cases that have been down with the disease continue to be carriers after their discharge.

In my own investigations in Norfolk, being struck, as doubtless all health officers are, at the increased incidence of diphtheria immediately following the opening of the schools in the fall, I caused last year an examination of all school children before entering the school. A force of twenty-two physicians and as many nurses were sent to the various schools and the children were taken one at a time in an examining room; cultures were taken from every throat that presented the least suspicion. I would

like to have taken cultures from every case, but there being some 12,000 children, this was impracticable, with the force and equipment at my disposal, so cultures were taken only from those cases that seemed most suspicious. We took cultures from 108 cases, twelve of which proved positive, showing the presence of the Klebs Lœffler bacilli—eight of the cases proved to be virulent upon the inoculation of guinea pigs. All of the 108 suspicious cases were kept from school pending the result of the bacteriological examination. We had fewer cases following this procedure among the children last winter than for several preceding terms. Some of the precautions that I would recommend in view of the conditions above outlined are that cultures be taken from the throats and noses of all school children at the beginning of the fall term if practicable, certainly from all that present symptoms at all suspicious. That cultures be taken from the family and attendants in all cases of diphtheria. That at least two negative cultures be taken from all cases—from both throat and nose—on alternate days before release, and thorough terminal fumigation; wash up quarters following by sterilization under steam of all clothing, bedding and paraphernalia in sick room and the usual routine precautions carefully followed out as is customary by all modern health departments, such as immunizing doses of antitoxin to those exposed, supervision and surveillance of the family as far as their movements are concerned, etc.—all detected carriers, of course, to be cured and at least two general examinations made of all school children during the school term and a careful education of the children by the inspectors as to the method of transmission, the danger of mouthing articles, swapping pencils, etc.

With reference to the use of immunizing doses of antitoxin, we must impress upon the profession the fact that the immunity granted by antitoxin is of short duration, perhaps not longer in most cases than two or three weeks, and if the exposure is repeated or prolonged that a second or a third immunizing dose should be administered; the importance of this is demonstrated in my own department where, notwithstanding we give antitoxin free, I do not recall a case in which a second immunizing dose has been called for. As to the restrictions to be put upon members of the family as far as their liberty is concerned, I am of the opinion that those members of a household in which there is diphtheria, whose duties require contact in close quarters with large numbers of children, should be restricted, as teachers in schools, clergymen and others who are thrown intimately in contact with any great number of children.

With regard to typhoid fever with an incidence of 300,000 cases and a death-rate in the United States of some 30 to 35,000, or an average of 46 per cent. per 100,000, as against Germany with 7.6 per cent. per 100,000, and England with 11.2 per cent. per 100,000 and many other European countries running as low as 3 per cent. per 100,000, with 3 per cent. of the

cases terminating in carriers, it is high time that we take more aggressive and active precaution to mitigate this terrific death toll, and, at least, put our country on a par in this particular with the best countries of Europe. Why wouldn't we? Are we less intelligent, less interested, or haven't we the energy? My suggestions are in typhoid—other than the careful isolation, quarantine and routine treatment of cases—a more careful investigation of the history of each and every case, in an endeavor to locate the source of infection; a more efficient supervision of our milk and water supply; more rigid food inspection and screening; a more careful and thorough supervision of the disinfection of the discharges from the patient. We placard typhoid, fumigate and sterilize. Release fecal cultures in all cases.

We have adopted this plan in Norfolk using the Stokes-Stoner outfit for this purpose, and an earnest effort made by the health officials to induce as many people as they can reach to take typhoid vaccine, and a united and concerted effort upon the part of all people, regardless of position or calling, to correct the colossal communal crime of our times; to put a stop to the wholesale slaughter of our people by the universal contamination and pollution of the waters of the nation by sewage, the custom in this country being to supply its people with diluted death-dealing sewage for drinking purposes. One of the wisest precautions would be to regard every person for a time after his recovery from typhoid as a potential carrier and to instruct him fully as to the dangers of spreading the disease; teach him and insist upon a thorough disinfection of the discharges from the bowels and bladder and also his hands after toilet. These patients should not be permitted to handle food of other people, particularly cooks, waitresses, waiters, soda fountain attendants and others of this class, until we are absolutely sure that the case does not terminate in a carrier.

Cerebro-Spinal Fever. From investigations and studies made by Elser & Huntoon and by Meyer & Greebar they concluded that in cerebro-spinal fever as in diphtheria and typhoid, carriers played a very important part in spreading the disease; in fact their conclusions were that the disease was spread principally by carriers who gave off the meningococcus in the secretions of the nose and throat. Many investigators are of the opinion that in an epidemic there are far more carriers than there are cases. The great difficulty then in the control of cerebro-spinal meningitis is the recognition and control of the carrier—the most important factor in the dissemination of the disease.

Measles. The one great obstacle in the way of the control of measles is that the disease is communicable in the preëruptive stage, before a diagnosis can possibly be made. It is, therefore, impossible to handle epidemics with any degree of success, because children attend school,

motion-picture and other shows and many other public gatherings, disseminating the disease broadcast, before anyone recognizes that trouble is brewing. The best we can do is to isolate the cases when we can get them, prohibit other children in the same house from going to school or other public places and educate the public that they should isolate all children during an epidemic that presents the first symptoms that point in any way to an approaching case of measles.

In scarlet fever—not knowing with certainty either the precise cause or mode of transmission, although it is pretty well settled that the virus is contained in the secretions of the nose and throat and is probably streptococcus—strict isolation and quarantine as long as there is any abnormal discharge from the nose, throat and ears or suppurating glands, and a thorough disinfection of all discharges from the patient is about the best we can do in the light of our present knowledge, although some observers claim to have gotten excellent results from streptococcus vaccine.

In smallpox we are again confronted with a lack of knowledge with regard to the cause and mode of transmission, but we have in vaccination a prophylactic of absolute certainty, provided it is properly done, and repeated before susceptibility is again established.

The failure here in the control of smallpox is due absolutely to the carelessness of physicians, patient or family. If all children were successfully vaccinated during the first year or two of life, again about the seventh or eighth year and again upon maturity and vaccinated immediately after every known exposure, smallpox would in a decade or two disappear from the face of the earth, but the great trouble is that physicians will so often carelessly vaccinate their patients and never investigate as to whether it was successfully done or not. It goes without saying, of course, that all cases of smallpox should be rigidly and intelligently handled as far as isolation, quarantine and terminal cleaning up is concerned.

In whooping-cough there is a woeful lack of supervision and precaution. It is almost impossible to isolate and confine a child, especially with a mild case of whooping-cough, in the house eight or ten weeks, but we could prevent the child from associating with other children, and every case that is permitted to go at large should bear upon breast or arm a notice to other children that the child has the disease and warning them to avoid immediate or close contact.

Pneumonia should be regarded as a communicable disease; should be reported and placarded and should be avoided especially by those having colds, inasmuch as they are thus rendered more susceptible. All discharges from the respiratory passages should be immediately disinfected.

Time will not permit a discussion of all communicable diseases. Most of the precautions indicated in those mentioned are more or less applicable to all diseases of the class.

Rosenau says that the most important advance made in the last decade, in the domain of preventive medicine, is the establishment of the fact that most all communicable diseases must be dealt with as an infection spread by man to man; that man is man's greatest foe in this regard and is himself the great source and reservoir of human infection, which makes the problem even more difficult to handle satisfactorily inasmuch as man himself is the one animal most difficult to control.

There are still a few superstitious fatalistic foolish people, who pretend, at least, to believe that all sickness and death is directly in the hands of God and dealt out by Divine dispensation as a punishment for sins, and, therefore, do what we will are unavoidable. We have to try to counteract this phase of mental delinquency by education, but persons who hold such views in the twentieth century are well-nigh hopeless and perhaps if we save them to propagate their kind we do more harm than good.

Moreover, we have to contend against the insincerity and the lack of earnest coöperation of a certain class of physicians. It is almost a daily experience in my department, and I am sure that all health officers are confronted with the same conditions, where physicians will advise the families and patients along lines directly antagonistic to the policies of the health department. They say that we are faddish and hobby riders and that this, and that, is not at all necessary, and assisting the family and patient to evade, violate and set aside, the rules and regulations of your department to the detriment of the public at large. I had a physician in Norfolk only a few days ago, who appeared in court in the interest of a man whom I had had arrested for refusing vaccination after an exposure to smallpox in his own house. The doctor testified that the man's blood was in bad condition and contra indicated vaccination, and in his opinion the health department should be required to obtain certificates of health from the family physician of all people before vaccinating them, in spite of this, however, we fined the man $25 and vaccinated him before he left court. I am glad to say that we haven't many doctors in our community that do not coöperate with the health department, but there are some, as there are in every community, and they do great harm to the progress of your preventive work.

Inefficiency of departments of health in the small cities, towns and counties.—My allusion to the inefficiency of the health departments of the small city, town and county is not offered in the spirit of unfriendly criticism. I know of very able sanitarians and physicians who are health officers in these places, but they are handicapped by lack of authority, funds and material, to properly carry out their work. Many of them are directly under the control and authority of county or town supervisors, composed of laymen, who do not know, or realize or haven't faith in prophylactic work. They look upon every dollar spent as money devoted

to charity pure and simple, with absolutely no returns. One of the first duties of a health officer is to convince the "powers that be," those in authority, that hold the purse strings, that fighting disease, particularly communicable disease, is a paying investment, yielding large returns in dividends of health and human efficiency and progress upon the time and money spent; direct their minds away from the single humanitarian view, because you are dealing generally with hard, cold business men who are trained and educated to demand direct returns for labor and capital invested—this applies to all communities, large and small alike.

DIRT SEDIMENT TESTING — A FACTOR IN OBTAINING CLEAN MILK.

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It is a well-established fact that filth in milk is, as a rule, associated with bacterial contamination. These bacteria are introduced into the milk by means of the particles of dust, manure, skin, hay, and feed to which they are attached, and milk thus contaminated may become a serious menace to health. Thus septic sore throats, tuberculosis, diarrhœal diseases of infancy, dysentery, typhoid fever, etc., have been placed to milk and large epidemics of some of these diseases have shown the necessity of insisting upon the production of clean milk. Pasteurization will, it is true, destroy the specific disease bacteria, but it cannot make dirty milk wholesome. While a large proportion of the dirt may find its way into the milk from unclean cows, dirty or dusty barns, it must not be forgotten that some of it may be derived from the utensils into which the milk is placed, from the machinery through which it passes, and from unclean hands or clothing of those who handle the product. The insoluble dirt in milk can readily be estimated by straining through cotton or by the use of the centrifuge, while the soluble dirt passes through the cotton and may reveal its presence by a uniform discolorization.

Relation of Amount of Dirt to Number of Bacteria.

Some forms of dirt, like coal dust, are almost sterile, while others, like manure, are alive with bacteria. A large number of examinations have shown that the amount of dirt approximates the number of bacteria in fresh unfiltered milk tested at the time of production. Bacteria rapidly reproduce themselves in milk kept at a temperature above 50° F., so that a fairly clean milk according to the sediment test may, after twelve or more hours, have a high bacterial count. Any admixture of old milk or careless handling or straining through unclean materials may add millions of bacteria to milk which was originally of the best quality.

Milk which has not been strained previously through cotton or close filters, may be tested for the amount of sediment which it contains. This testing may be done at the creameries and affords a rapid way of ascertaining approximately the amount and character of the contamination to which the milk has been subjected at the time of milking. The use of the sediment test in the city will show the original dirt, plus the contamination which it may have acquired during the process of handling, at the creameries or bottling plants.

Numerous methods have been devised during the last fifteen years but no one method has as yet been generally adopted.

Methods of Obtaining Sediment.

The methods of obtaining the sediment in milk may be divided into two groups:—

Group 1. Sediment obtained by gravity filtration.
Group 2. Sediment obtained by centrifugalization.

Group I. (a) *Type in which the sediment is obtained by gravity filtration.*
Conn's Filter Paper Method.
The Lorenz or Wisconsin Tester.
The Stewart Tester.
The Gerber Tester.
The Schroeder Tester, or Multiple Filter.
(b) *Type in which pressure or suction is used.*
The Lorenz Improved.
The Wizard.
The Gooch Crucible.

Group II. *Type in which the sediment is obtained by means of the centrifuge.*
The Babcock.
The Gerber.
The Stewart Slack.
Conn's Centrifugal Method.

Conn's Gravity Filter Paper Method.

By this method the sediment is obtained by allowing the milk to stand several hours. After the removal of the supernatant milk, salt solution is added and the sediment washed. This procedure is repeated a number of times, and the sediment is finally collected upon dried and weighted filter papers. Finally the paper with the sediment is dried and weighed and the amount of sediment estimated.

The Lorenz Model or Wisconsin Dirt Tester.

The Lorenz Model or Wisconsin Dirt Tester (see Fig. 1) is composed of two cylinders made of copper, one within the other. The outer cylinder has a narrow piece of tubing fitted into the lower portion which is so arranged that it may be connected by means of rubber tubing with a hot water supply.

The water jacket was found necessary owing to the fact that cold or icy milk does not filter rapidly. Under these conditions there is apt to be a deposit of cream upon the surface of the cotton. This cream not only

Fig. 1.—Lorenz Model Dirt Tester. (Courtesy of Lorenz Model Co.)

interferes with the passage of the milk, but with a proper estimate of the amount of dirt sediment.

When the filter is to be used, a disc made of absorbent cotton is placed within the cap. The inlet tube is attached by means of rubber tubing to a hot water supply and the space between the cylinders is filled with hot water which flows off through the upper outlet. A pint of milk is poured into the inner cylinder and is filtered through the cotton.

Stewart Tester.

The Stewart Tester consists of two or more straight tubes fitted with strainers at one end. These tubes pass through a metal box. The air in the interior of the box is heated by means of an alcohol flame which warms the tubes holding the milk.

The Gerber Tester.

The Gerber Tester is shown in Fig. 2.

It consists of a cylinder with sloping sides fitted with a special cap at its

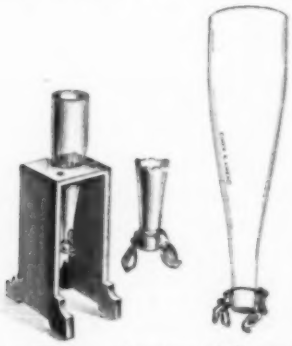


Fig. 2.—Gerber Filter. (Courtesy of Eimer & Amend.)

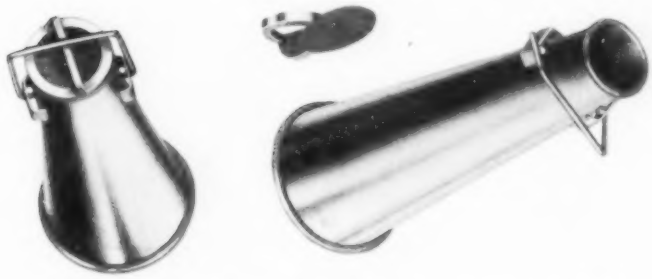


Fig. 3.—Individual Testers, Schroeder Filter. (Courtesy C. Vail.)

narrowed end. The sample is poured into the container and this is then set in the rack.

The Schroeder Filter.

The Schroeder Filter is a modification of the Lorenz Filter and is adapted for use in creameries where speed is an essential feature of the work.

It consists of a series of individual testers.

A hot water tank or jacket.

A lamp for heating the water.

A reservoir or carrying case.

The individual tester consists of a seamless cylinder of spun copper and fitted at the narrow end with a skeleton brass cap containing the brass disc and held in place by a copper catch (see Fig 3).

The hot water jacket is a covered box-shaped tank having ten cone-shaped, hollow cylinders passing through its entire depth for the reception of the

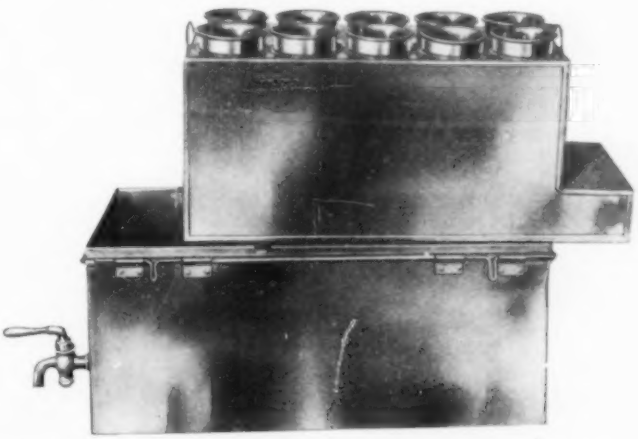


Fig. 4.—Water Jacket for Schroeder Filter set over carrying case or reservoir. (Courtesy of C. Vail.)

Fig. 5.—Carrying case and reservoir for Schroeder Filter. (Courtesy C. Vail.)

individual testers. It is provided with a water inlet and outlet and a steam vent. A covered extention serves for the direct application of heat. A movable brass bar is fastened to the under surface to act as a support for the jacket when the tester is in use (see Fig. 4).

Lamp for use with the tester. The alcohol lamp consists of a powerful burner, regulated by a screw, so that the flame may be raised or lowered and a larger reservoir for alcohol. The reservoir is fitted at each end with a shoulder piece having a turned edge upon its upper side. This edge

Fig. 6.—Improved Wisconsin Tester. (Courtesy of Lorenz Model Co.)

slips over the corresponding ridge on the extension and holds the lamp in place when the apparatus is in use.

Carrying case or reservoir (see Fig. 5). The case is made of light copper. The cover is hinged and closes anteriorly with a copper wire bolt as shown in the illustration. For convenience in carrying, a leather handle is attached to the cover by reinforced metal strips. The case also acts as a reservoir for the milk flowing through the filters. The milk is drawn off through the small detachable faucet shown in the illustration, directly into a milk can. This can may be set in a box of ice, thus cooling the milk and obviating any loss of the product.

It is easily adaptable for use in large dairies or creameries and can be

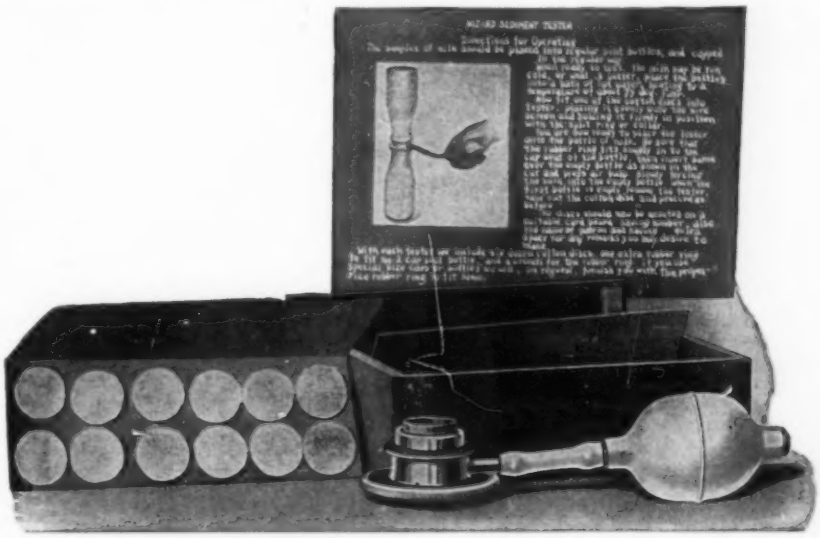


Fig. 7.—Wizard Tester. (Courtesy of Creamery Pkg. Co.)

made a permanent fixture. In this case, the cups may be made quart or pint size and numbered. The hot water jacket may be coupled up with a steam jet and the reservoir connected with the receiving vat or mixing tank. If the apparatus is placed in the receiving room, the milk may be taken from the cans of the individual dairymen as they deliver the milk and then poured into the numbered cups. The milk filters through into the reservoir and may be drawn off from time to time and thus no loss or waste entailed. By the time the last dairyman has delivered his milk, the other samples have passed the filters and all the cottons are ready for comparison with the gauge. This apparatus was devised with the hope of making the testing for dirt more practicable, is not patented and can be made by any who desire to manufacture it.

TYPE IN WHICH PRESSURE OR SUCTION IS USED.

Wisconsin Improved Tester. This filter is similar to the Lorenz Model shown in Group I with the addition of a close-fitting lid and pressure bulb, but without the water jacket. The pressure increases the rapidity of the flow of the milk (see Fig. 6).

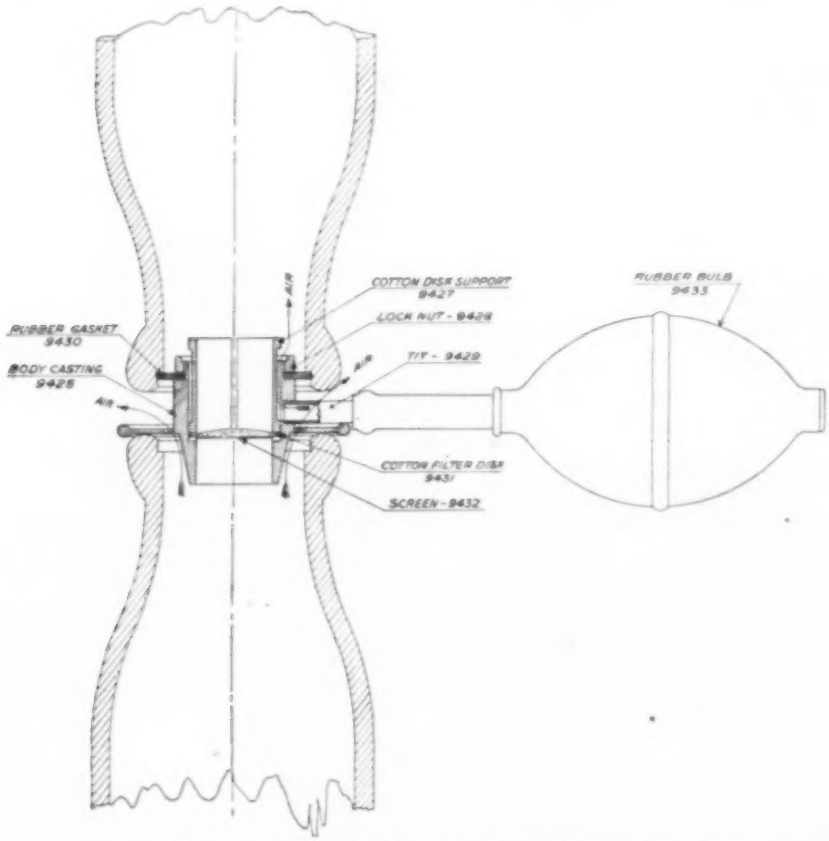


Fig. 7a.—Diagram of Wizard Tester. (Courtesy of Creamery Pkg. Co.)

The Gooch Crucible Filter. A cotton disc is placed inside the Gooch Crucible and the crucible set in the neck of the Woulf bottle. The side-arm is then connected with a pressure pump and the milk is poured into the crucible and drawn through by means of suction.

The Wizard Tester is useful in ascertaining the amount of sediment in milk as offered for sale (see Figs. 7 and 7a). The air pump is necessary to prevent the development of a partial vacuum. (7a shows a diagram illustrating the parts of the tester.)

Type in Which Sediment is Obtained by Means of the Centrifuge.

Considering the second group briefly, we have

1. Babcock Method.
2. Gerber Method.
3. Stewart-Slack Method.
4. Conn's Centrifugal Method.

The Babcock Tubes (see Fig. 8) are intended for use in the Babcock machine. The tube, as a whole, consists of three parts:—glass tube, glass tip and wooden bushing. The tube proper is open at both ends, with one end carefully ground to receive the glass tip; a wooden bushing covers the lower portion of the tube enabling its adjustment to the brass cup of the tester.

After the milk has been centrifuged, the tube is removed from the centrifuge and the amount of sediment is read directly from the tube.

Fig. 8.—Babcock Tubes. (Courtesy of Biesicker & Co.)

The Gerber Method is also one in which the milk is centrifuged and the amount of sediment is read directly from the tube.

The Stewart-Slack Method consists in the use of small glass tubes, open at each end. The lower opening is closed with a small rubber stopper. The tubes are filled with milk and placed in a special centrifuge disc and then centrifuged. The dirt is thrown upon the rubber stopper and adheres thereto when the stopper is withdrawn.

Conn's Centrifugal Method. A definite quantity of milk is centrifuged and after the dirt has thus been sedimented, the supernatant milk is removed by means of a pipette. The sediment is washed and collected upon dried and weighed filter papers which are again dried and weighed, and the amount of dirt determined. To obtain the moist weight, it is necessary to multiply the figures obtained at the end, by a certain factor which will reduce it to the weight of ordinary moist material. This, of course, will be a variable one, according to the material of which the dirt is composed but a rough approximation may be obtained by multiplying the dry weight by the factor of 7 which will produce a result not very far out of the way.

Use of the Test for Sediment in Milk.

In order to determine how much the sediment test was being used and what value was placed upon the test, a questionnaire comprising a number

of questions was sent to health officials of cities, to agricultural stations and to milk dealers throughout the country.

Do you use any test for ascertaining the amount of dirt in milk? If so, what type? How often?

Where is milk tested, at creameries as received from individual dairymen, or city plants, railroad stations, wagons, etc.?

Do you grade the amount of dirt found and are the results recorded and posted up so that the dairymen may see how their milk runs?

Of what value do you consider the test?

In response, we received 106 replies and the results are shown in Table I.

TABLE 1.

TABULATION OF REPLIES RECEIVED.

	Replies Received.	Using Test.	Not using Test.
Health Officials	36	30	6
City Milk Dealers	29	9	20
Dealers not in New York City	37	18	19
Not Signed	4	—	4
Totals	106	57	49

Of the total number of replies received 57, or 53.7 per cent. of the writers, state that they are using the test, 46.2 per cent. are not using the test. Among this number are some who are making preparations to use the test, being convinced of its value.

The replies in detail are given in Table 2.

While the replies from the questionnaire were being received and tabulated, the methods used in sediment testing were subjected to a critical study to see if any changes were required in the tester used by the Department and also to formulate some plan to make the testing of milk and recording of sediment cottons available for all creameries shipping milk to New York. A large milk company placed one of its creameries at our disposal and experimental work started in the latter part of July, 1913.

The results obtained are given in the succeeding paragraphs.

TEST TO ASCERTAIN THE FACTORS INFLUENCING GRAVITY FILTRATION.

In this experiment, 416 samples of milk were tested. The points considered were the temperature, the time the milk took in passing through the filter cotton, the amount of fat and the total solids. The temperatures most favorable to filtration were from 40 to 80°. An analysis of the time element gives the results shown in Table 3.

TABLE 2.
TABULATION OF RESULTS OBTAINED FROM QUESTIONNAIRE.

Number of Question.	Question.	Replies.				Total.
1.	Do you use Sediment Test?	Using test			57	
		Not using test			49	
					—	106
2.	Type of Tester.	Wisconsin	21	Wizard	10	
		Stewart-Slack	2	Gerber	1	
		Babcock	1	Stewart	1	
		Gooch Crucible	3	Schroeder	3	
		Jones	1	Not stated	6	
		Miscellaneous	8		—	57
3.	At what places is milk tested?	Tested at country creameries			32	
		Tested at city plants			18	
		Tested at wagons			1	
		Tested at railroad depots			1	
		Tested at stores			1	
		Not stated			4	
					—	57
4.	Regularity with which test is used?	Testing daily	10	Monthly	13	
		Testing weekly	5	Bi-monthly	3	
		Testing bi-weekly	2	Quarterly	1	
		Testing bi-yearly			1	
		Testing at irregular intervals			9	
		Not stating action taken			13	
					—	57
5.	Concerning the grading of the sediment.	Number grading sediment			13	
		Number not grading sediment			30	
		Number not stating action taken			14	
					—	57
6.	Tests recorded.	Number recording results			34	
		Number not recording results			7	
		Number not stating action taken			16	
					—	57
7.	Anent the posting of results.	*Number posting results			21	
		Number not posting results			22	
		Number not stating action taken			14	
					—	57
		Number stating that middlemen, shippers and dairymen were notified				43
9.	Concerning the value of test.	Number considering test of good value			37	
		Number considering test of slight value			1	
		Number considering test of no value			2	
		Number not stating opinion but using test			17	
					—	57

*A number considered it unwise to post results owing to competition.

TABLE 3.

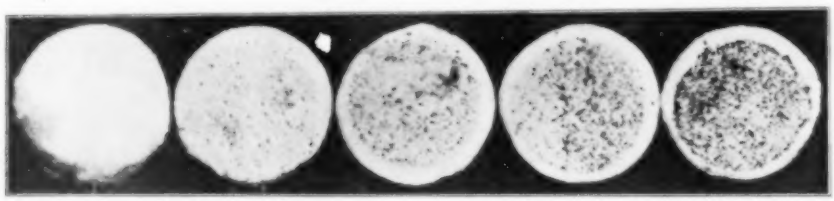
TABLE SHOWING RAPIDITY OF FLOW OF MILK THROUGH FILTER COTTON.

46	or 11.0%	filtered through the cotton in less than 1 minute.
287	or 68.9%	filtered through the cotton in from 1 to 3 minutes.
31	or 7.4%	filtered through the cotton in from 3 to 5 minutes.
18	or 4.3%	filtered through the cotton in from 5 to 10 minutes.
17	or 4.0%	filtered through the cotton in from 10 to 60 minutes.
17	or 4.0%	filtered through the cotton in over 60 minutes.

It will be seen that over 87 per cent. of the samples filtered through the cottons in less than 5 minutes.

Judged from the data obtained from the chemical tests, the filtration process did not seem to be affected by the fat content, total solids, or the amount of sediment present in the form of visible dirt. A large excess of leucocytes or epithelial cells tended to retard the filtration.

A number of tests were made on colostral and stripper milks, but we found that these milks, as a rule, filtered through quite readily.



1 2 3 4 5

Fig. 9.

According to Baer, the sediment test may also be applied to cream. His method is to dilute the sweet cream with an equal amount of warm water. In testing sour cream, it is necessary to dissolve the curd. This may be done by the addition of an alkaline solution made by dissolving a small can of lye in 2 quarts of water; when cool, the mixture is strained, bottled and corked. The amount of solution necessary is determined by the acidity of the sample. Cream having 0.5 per cent. or 0.6 per cent. acidity, will require about 30 cc. of the solution. Sour cream must be diluted in the same manner as sweet cream.

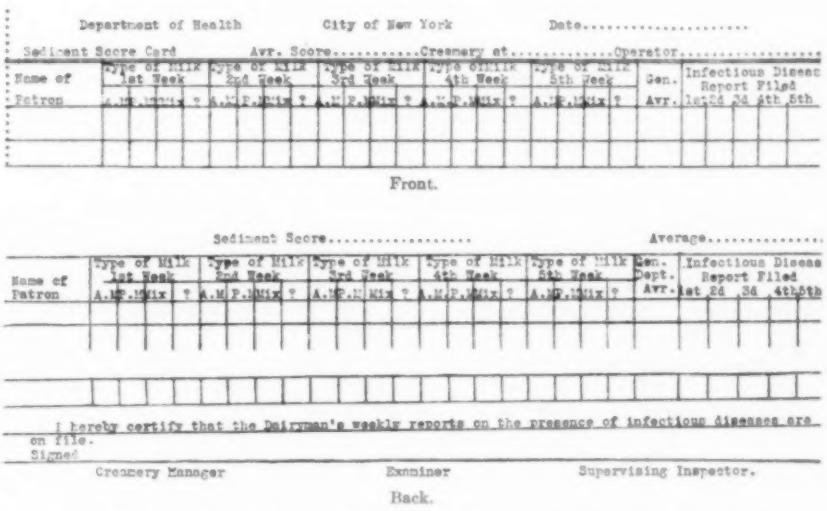
Method of Reading Results of Filter Test.

Owing to the difficulties of making comparative readings of the amount of sediment collected upon filter cottons, gauges have been devised. The one elaborated by us is shown in Fig. 9. This gauge represents the amount of dirt obtained by filtering liter lots of milk to which had been added

respectively 2½, 5, 7, and 10 milligrams of the material which usually finds its way into the milk.

No. 1. represents the cotton filter after the passage of clean milk.
No. 2 represents sediment from fairly clean milk.
No. 3 represents sediment from moderately clean milk.
No. 4 represents sediment from dirty milk.
No. 5 represents sediment from excessively dirty milk.

In some cities of Europe, milk containing over 5 milligrams of dirt per liter is considered unfit for food and confiscated.


Department of Health City of New York Date.....

Sediment Score Card Avr. Score.....Creamery at.....Operator.....

Name of Patron	Type of Milk 1st Week				Type of Milk 2nd Week				Type of Milk 3rd Week				Type of Milk 4th Week				Type of Milk 5th Week				Gen. Avr.	Infectious Disease Report Filed 1st	2d	3d	4th	5th
	A.	M.	P.	Mix	?	A.	M.	P.	Mix	?	A.	M.	P.	Mix	?	A.	M.	P.	Mix	?						

Front.

Sediment Score..... Average.....

Name of Patron	Type of Milk 1st Week				Type of Milk 2nd Week				Type of Milk 3rd Week				Type of Milk 4th Week				Type of Milk 5th Week				Gen. Dept. Avr.	Infectious Disease Report Filed 1st	2d	3d	4th	5th
	A.	M.	P.	Mix	?	A.	M.	P.	Mix	?	A.	M.	P.	Mix	?	A.	M.	P.	Mix	?						

I hereby certify that the Dairyman's weekly reports on the presence of infectious diseases are on file.

Signed

Creamery Manager Examiner Supervising Inspector.

Back.

Fig. 10.—Special Record Blank used for Recording Results of Tests.

Preparation of Sediment Cottons for Permanent Filing.

After the cottons are removed from the filter, they are placed upon white blotting paper and sprayed with a strong solution of bichloride of mercury. Good results are obtained by using an ordinary throat spray. The cottons are then allowed to dry. This drying process may be hastened by placing them in a hot-air oven at a low temperature carefully protected from dust and flies.

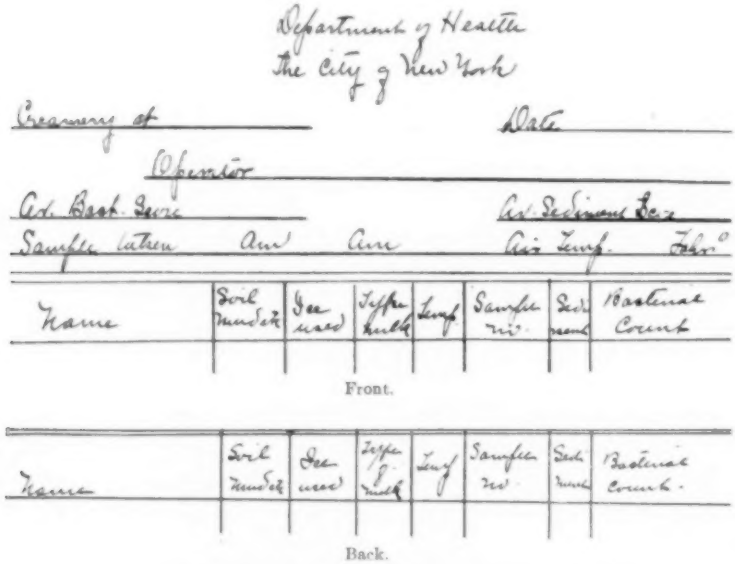
When dry, they may be compared with the gauge, the results recorded and cottons deposited in paraffin envelopes for filing.

If desired, the dry cottons may be dipped into very hot paraffin. The hot paraffin gives a thin coating and a permanent preparation may be made in this way. Forceps must be used to hold the cottons while dipping them into paraffin.

Method of Recording the Tests.

A number of cities and dealers have various ways of bringing the results of the tests to the attention of the dairymen. Some simply place the filter cottons upon board, and hang this so that each farmer may see the result of the test of his milk.

Description of Board. A smooth board is chosen and painted white and moulding is attached to three sides so as to form a frame and groove. The groove is intended for the reception of a glass plate. The surface of the board is divided into spaces having an area of 2 square inches. These squares are numbered with the patron's number and serve for the reception


Department of Health
The City of New York

Creamery of _____ Date _____

Operator _____

Act. Bact. Test _____ Act. Sediment Test _____

Sample taken Am'l Am'l Air Temp. Fahr°

Name	Serial number	Test used	Type of milk	Temp	Sample No.	Serial number	Bacterial Count

Front.

Name	Serial number	Test used	Type of milk	Temp	Sample No.	Serial number	Bacterial Count.

Back.

Fig. 11.—Card used for Recording Data Obtained in Country.

of the cotton from the test. The cotton is attached by means of a tiny tack or mucilage. The glass is then slipped into the groove, and serves to protect the cottons from dust.

Others attach the filter cottons to cards and send them to dairymen with admonitions. A sample letter and card are shown.

Auburn, Maine.

Dear Sir:

We enclose a cotton disc containing the dirt strained from a half pint of your milk.

If the question of dirty milk were simply one of appearance, a finer or thicker strainer would solve the problem. But each particle of dirt falling into the milk carries with it a great number of bacteria which multiply very rapidly in warm milk. These bacteria cause the changes which occur in milk. Clean milk keeps longer than dirty milk because it con-

tains fewer bacteria. The solid dirt in milk can be strained out, but bacteria are still left behind to do their mischief. Consequently, the remedies for dirty milk are clean cows (the most important—three quarters of the dirt comes from the cows), clean tie-up (tight ceiling over tie-up to keep the chaff from falling), careful handling, etc.

Your milk will be examined again and report sent.

Respectfully,

TURNER CENTRE DAIRYING ASS'N.

SAMPLE CARD

This represents the sediment in one pint of your milk received on

.....

clean

fairly clean

dirty

filthy

Remarks.....

.....

.....

.....

.....

THE BELLE-VERNON MAPES DAIRY CO.

One Health Board cuts the discs in half and retaining one half, sends the duplicate to the dairyman delivering milk.

METHOD OF RECORDING RESULTS.

The cottons may be pasted into a loose-leaf ledger and thus a permanent original record kept of each test and the improvement or deterioration noted, or the results only may be entered upon an individual card and indexed. They may be also numbered and filed in thin metal trays.

The method used by New York City at present is as follows:—

The country inspector visits the creamery and takes one pint of milk from each patron. The milk is then subjected to the filter test. The cottons are sprayed with a strong solution of bichloride and partially dried.

The tests are then cut in half, one half is left with the creamery manager, the second half is placed in a small glassine envelope.

The small envelopes are then placed in a stout manila envelope and together with the special record sheet (see Fig. 10) sent by mail to the Bacteriological Laboratory for comparison with the gauge and recording the results. The Inspector also secures the data shown on the card illustrated

12 F—1912 22-130, '12, 25,000 (P)

Department of Health, The City of New York

DIVISION OF FOOD INSPECTION

Date ..... *Time* ..... *A. P. M. Air Temperature* .....
Inspection No. ..... *Sample Nos.* .....
Taken from ..... *Business* .....
Address ..... *Store. Wagon. Permit No.* .....
Shipped from ..... *Taken at* .....
How Labelled .....
.....
Pasteurized ..... *Where* ..... *Time* .....
Containers and Utensils Clean ..... *Containers Sterilized* .....
Containers Sealed ..... *How Iced* .....
Samples Delivered at Laboratory .....

Inspector of Foods (Milk)

Front.

Taken from	Quality Grade	Shipped from Creamery	Temp	Sample Number	Sediment	Bacterial count

Examined by ..... Approved .....
Bacteriologist Director of Laboratories

Remarks .....

Chief Inspector Division of Food

Back.

Fig. 12.—Card used by City Inspector.

(see Fig. 11). The Inspector who makes the sediment test in the city, records his data on the small card shown (see Fig. 12),—these cards may also be used if bacterial samples are to be taken in conjunction with the sediment test.

In closing, I wish to thank Dr. William H. Park, General Director of Laboratories, for the many helpful suggestions and kindly interest which has made this work possible.

For assistance in the technical work, I am indebted to Dr. Southerland and Messrs. Lowy and Britton.

MODERN HEALTH ADMINISTRATION: AN ANALYSIS.

(Abstract.)

DR. OSCAR DOWLING,
President Louisiana State Board of Health.

Read before the Section of Public Health Officials, American Public Health Association, Colorado Springs, September, 1913.

The organization, functions, methods and activities of health boards as a unit of the public service is a pertinent and fruitful topic.

The present system is an inheritance from the old order. In common with many other features of governmental and social administration, it is at present a target for the student critic interested in human progress.

The form of municipal government, which heretofore met the public demand, is rapidly passing; the cumbersome bicameral law-making assembly of the state is a point of attack; even the unwieldy National Congress is considered unsatisfactory.

Health departments as organized belong to the day when the science of medicine was yet in swaddling clothes. Members of boards are selected to meet the wishes of the dominant party. Fitness, training, efficiency, do not count when weighed in the balance with the fourth-ward boss or the leader of the eighth district. The most loyal party man in theory will agree that school and health officials should be chosen on a basis of qualification for the work; yet when appointments are considered, to the victor the spoils is the policy and there is no headway toward reform.

The limitations of the board system are apparent to all. The members without unity of thought or purpose, perhaps without authority to select their own executive, cherishing it may be petty personal animosities or private ambitions, rarely unite in a clearly defined policy. Slow progress if progress at all, is the logical result.

With the evolution of a better system in public affairs, the need of boards is passing. The supervisor of public accounts ensures financial accuracy in every department. It is also clear that in emergencies the executive officer must take the initiative almost always on his own responsibility; likewise, he must bear the consequences.

Where effective health work has been accomplished under this régime, the executive officer, almost without exception, has been allowed to carry out his own policy and has been upheld by the other members of the board whether they approved or not. In this the management virtually is according to the science of modern business. Health experiments, pre-

eminently successful in other parts of the world, have been planned and executed by a governmental appointee having full authority. Where responsibility is placed definitely, fitness or unfitness, efficiency or non-efficiency, success or non-success become apparent; reward or remedy, likewise. For this most important branch of public service, a composite selected in return for political courtesies is as archaic in business management of today as the stage coach would be in transportation, or the hand loom in the manufacture of cloth.

Equal in importance with definiteness of responsibility is adequate power. For effective work, the health officer must be able to invoke the strong arm of the law. Whether the power be in the form of regulations as binding as statutes or specific enactments by the legislative body covering all practical phases of his work, matters little. The main point is adequateness. No imperative health measure should be delayed; no specific necessary activity rendered ineffective from lack of authority. Too often the welfare of a community depends upon prompt action; it may be legal procedure. Delay may mean dire calamity. The officer, who can be trusted with the direction of the department, can be given the authority.

In the growing tendency to analyze inefficiency in public administration, the functions of the health department are considered debatable. Every experienced officer realizes the distinction between the work which pertains to health and that which relates merely to comfort or convenience. This differentiation will depend ever on local conditions. Effort that is an essential in one community may be neglected with impunity elsewhere. Further, there can be a differentiation in the work, placing under police and other municipal departments certain features now controlled almost universally by the health authorities. In many cities this system obtains in reference to abatement of nuisances, collection and disposal of garbage and other features which pertain more to convenience than to health. This, too, must be solved by the local unit. Because of laxity in management it is wise at present that correlative lines be under the supervision of the department of health. The possibility that conditions, indirectly a menace to health, may become directly so must be taken into consideration and in the interest of effective control at a critical moment the responsibility should lie with the board of health.

If funds are adequate for these activities and those that are essential, at present, state and local boards should be charged with entire supervision. But if in the expenditure there should arise the question of prevention or control of disease, or of any primary health essential and the activity relating simply to comfort, no physician would hesitate to turn over the latter to any other division of the public service.

Unfortunately, for the conservation and promotion of health in major

lines the public desires to see something concrete in return for the per capita mills. The health board, having within its purview collection of garbage or inspection of plumbing, does not dare to ignore these in the interest of efforts for a lowered infant mortality rate, or for the immunization of the community to malaria. What one writer calls the push of popularity is behind clean streets, but there is no insistence on that return which is not objective.

The present financial status of many health departments arises partially from this attitude of the public mind. Almost without exception appropriations are inadequate, thus precluding the possibility of doing the health work on a business basis. The successful director of any enterprise plans with a bank account adequate to do the work well. If remedial measures are imperative he does not hesitate to be destructive that he may be constructive. High-priced equipment for the planter is a paying investment. Both spend in the interest of economy. A survey of the water supplies of an entire state may seem an expensive health measure, but if by this means the typhoid fever death-rate can be lowered it is money well spent.

Information, exact and adequate, is one of the needs of an active health department, but the expense involved is not a popular bill, either with the public or the finance committee. This is logical because sums spent in the past for this purpose were out of proportion in comparison with the results.

There is still another phase of relative values in the expenditure of appropriations. The measures must justify themselves. The tax payer's money is a sacred trust; it is needed for many things fundamental in public welfare. This department, in common with all others, in the expenditures should consider conscientiously the certainty of results or the wisdom of experiments.

In the differentiation of values and activities the conclusions must depend on local conditions. But, I believe, for all boards of health there is one duty paramount—the instruction of the people in the phase of medical science, prevention, which promises so much for the well being of humanity.

Acceptance of these principles must necessarily be slow; it implies a change in attitude, in thought, in belief. Its constructive phase reaches into the roots of the social structure and into the habits and customs of the individuals. But it is only through conviction that permanent and enduring reforms can be wrought.

THE COUNTING OF BACTERIA ON SURFACES.

DR. ADOLPH GEHRMANN,
Chicago.

Read before the Laboratory Section, American Public Health Association, Colorado Springs, September, 1913.

The numerous methods of floor and surface cleaning in use bring to us the necessity of selecting a technique for counting bacteria on surfaces that can give comparative results. Your attention is directed to these methods, and not to the results of counts. We have tried the different procedures in use and have found advantage in the method here described. There are some general facts relating to bacteria on surfaces that will also be of interest.

Bacteria on surfaces are in three different states: loose dust, smears, more or less water soluble, and held on oily surfaces. These conditions must be taken into account in making comparative counts before and after cleaning. We have found that the oil on surfaces acts as a protective covering for bacteria. In some street-car experiments the layer of dirt was so great that it could be lifted off in flakes. Attempts to disinfect such surfaces was not possible by spray methods. If such a surface is soaked up, it may yield many more bacteria from the deeper layers. The use of test bacterial suspensions in experiments on surface cleaning we found uncertain from a close numerical comparison, because the unit is not pliable as in the counts from liquids. A qualitative test may be like that from material from any other source.

We have used the following procedures:

Dust from a given surface by weight.

Water from washing a given area.

Swabs rubbed over an area.

Gelatin adhesive disc method.

Sealing off an area (as here described).

In using the dust method, there must be enough dust to be appreciable and in comparative tests the amount of moisture present is a variable factor. The wash water method is suitable for some direct examinations of surfaces. There is here, however, a very large factor in contamination during the swabbing up of the water. In using swabs a piece of paper with a hole was used to define the area, but we concluded that many bacteria were brushed aside. The gelatin adhesive disc method of Frost and Armstrong is suitable for accurate counting on surfaces. We found several reasons for adopting the method here described.

The area to be examined is positively set aside for our own use. It is perfectly protected from contamination. We can examine it quantitatively and qualitatively as fully as we may wish. Full control of the technique is certain, and possible growth of the bacteria during plating and the action of disinfectants is avoided.

My method for making these counts requires the following apparatus:

1. Cylinders of glass or other material, 3 to 4 cm. in diameter, with caps, and sterilized.
2. Test tubes containing 10 cc. sterile water.
3. Pipettes, 5 cc. capacity, and having .5 cc. special graduations.
4. Sterile Petri dishes.
5. Agar culture media.

Method of Sealing off Areas and the Special Pipette used in Plating.

6. Paraffin and brush.
7. Alcohol lamp.
8. Cup for melting tubes.
9. Forceps and grease pencils.

The technique of the method requires:

1. The wrapping and cover is taken from a cylinder and it is placed over the area to be tested.
2. Melted paraffin collodion, cement or glue is brushed around the cylinder, sealing it to the surface.
3. A tube of water is quickly poured into the cylinder.
4. With the 5 cc. pipette the water is agitated by drawing up and forcing down.

5. About 5 cc. of the water is withdrawn and emptied into the test tube, or .5 cc. is placed directly in a sterile Petri dish.

6. Plate cultures are prepared, following usual methods.

7. After cultivation the colonies are counted, and the bacteria calculated per square centimeter.

For making counts on perpendicular surfaces I have used a form of cover with a tube branch. This can be sealed to the surface in the same way as the cylinders for the horizontal surfaces. These covers must have a rim that is free so that the surface can be completely sealed. Their capacity should be such that the 10 cc. of water will fill the cover part completely to insure contact with the measured surface. The branch tube must be long enough to prevent any of the water splashing over the end. The general method is the same as that for making counts from horizontal surfaces.

The formula for determining the number of bacteria per square centimeter is as follows:

$$\frac{\text{Plate count} \times 2 \times 10}{\text{Sq. cm. in cylinder}} = \text{Bacteria sq. cm.}$$

Limitations in this procedure are that porous and irregular surfaces are not suitable for sealing; also it is only possible to make counts on walls up to within about two feet of ceilings.

In addition to the testing of surfaces in rooms and cars, we have found it of use in making counts from plates and other utensils in the household or in operating rooms.

The Columbus Laboratories.

BOOK REVIEWS.

Early Pulmonary Tuberculosis, Diagnosis, Prognosis and Treatment. *By John B. Hawes, 2d, M. D., Wm. Wood & Co., New York, $1.50.*

In the publication of his small book on "Early Pulmonary Tuberculosis," Dr. John B. Hawes, 2d, of Boston, has filled a longfelt want. As Dr. Richard C. Cabot writes in the preface of this work—"There are plenty of large authoritative books about tuberculosis. There are plenty of small books which are not authoritative. Doctor Hawes has written a book which is small and yet authoritative."

In fifty-eight pages Doctor Hawes takes up the subject in a systematic concise manner, devoting a chapter each to the important facts of the family history, past history, work and habits, present illness, physical examination, diagnosis, prognosis, and treatment. There are also important chapters on "Adventitious Signs not Due to Pulmonary Disease"; on "Conditions which may Stimulate Tuberculosis"; and on special methods of diagnosis and treatment such as the X-ray, tuberculin, and artificial pneumothorax. More might be added of the value of artificial pneumothorax in early cases which are characterized by hemoptysis or by high fever or by both. A novel feature of this book is the appendix, which fills forty-eight pages, and which, by means of illustrative cases, photographs and X-ray plates of identical cases, etc., brings out many of the important points discussed in the first part of the book.

If every physician would follow the advice given by Doctor Hawes, there would be many less cases of advanced pulmonary tuberculosis; this is particularly true in the case of children when the involvement of the bronchial glands should be recognized before the infection invades the lung tissue. Certainly there is no more important factor in the health of any community than the detection of early cases of pulmonary tuberculosis.

Rae W. Whidden, M.D.

Malaria: Etiology, Pathology, Diagnosis, Prophylaxis and Treatment. *By Graham E. Henson, M. D., with an introduction by Charles C. Bass, M. D. Twenty-seven illustrations. 12 mo. 190 pages. St. Louis, C. V. Mosby Co., 1913. Price $2.50.*

The recent advances in our knowledge of the etiology of malaria and the application of this knowledge to its control and eradication are well reviewed and summarized by the author. The descriptions of the malarial parasites, their life cycles, and their mosquito hosts are detailed and clear. The discussion of the different factors in the epidemiology of the disease is complete. In a monograph of this character, there might be expected a fuller consideration of the pathology of the disease than has been given it. The discussion of the laboratory diagnosis of the disease is of great value. One wonders why the author fails to mention the important work of Brown on the relationship between hematin and the malarial paroxysms, and in the discussion of the pernicious types of the disease no mention is made of malarial hemoglobinuria or blackwater fever. The chapter on prophylaxis is good and in the chapter on treatment the use of the different forms of quinine is well considered. The reviewer believes that from the standpoint of a monograph, the value of the book would be enhanced if citations of the work of the authors referred to or quoted had been included. The mechanical features of the book are satisfactory.

Mark F. Boyd, M.D.

Hygiene and Sanitation: A Text-Book for Nurses. *By George M. Price, M. D., Director Joint Board of Sanitary Control; Director of Investigation, New York State Factory Commission. 12 mo. 236 pages, cloth, $1.50 net. Lea & Febiger, Philadelphia and New York, 1913.*

This book forms one of a series of text-books for nurses and is devoted to the problems of general hygiene. The housing question is taken up with reference to ventilation, heating, disposal of wastes, and disinfection. In another chapter the hygiene of food is discussed. It includes the nutritive value of various foods, their preservation and particular dangers to health. Milk and its products are given a fairly complete account. One chapter is devoted to the hygiene of the school, both as regards the room itself and the health of the pupils. The remainder of the book gives a brief discussion of the hygiene of occupation, municipal and personal hygiene. The author has succeeded in arranging his facts in a form which should make this book of very great value in the training of nurses, particularly along the lines of public health.

Ruth Bryant.

OTHER BOOKS RECEIVED.

Tuberculin in Diagnosis and Treatment. *By Francis Marion Pottenger, A. M., M. D., LL. D., Medical Director of the Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal. 243 pp. Royal octavo. 35 illustrations, one colored plate. Price $3.00. C. V. Mosby Co., St. Louis, Mo. 1913.*

Underground Waters for Commercial Purposes. *By Frank L. Rector, B. S., M. D., 12 mo v-97 pp. Illustrated. Cloth, $1.00 net. John Wiley & Sons, Inc. New York; Chapman & Hall, Ltd., 1913.*

Pocket Cyclopedia of Medicine and Surgery, *Gould and Pyle. Second Edition, Revised, Enlarged and Edited by R. J. E. Scott, M. A., B. C. L., M. D. New York. $1.00. P. Blakiston's Son & Co., Philadelphia, Pa. 1913.*

London Public Health Administration. A Summary. *By W. McC. Wanklyn, B. A. Cantab. M. R. C. S., L. R. C. P., D. P. H. Fellow of the Royal Society of Medicine, Fellow of the Society of Medical Officers of Health, etc. Longmans, Green and Co., 39 Paternoster Row, London, New York, Bombay and Calcutta. 1913. 59 pp. $0.90 net.*

Crime, Its Causes and Cures. *By Thomas Speed Mosby, Member of the American Bar; Former Pardon Attorney of the State of Missouri; Member American Institute of Criminal Law and Criminology. Illustrated. 354 pp. $2.00. C. V. Mosby Co., St. Louis. 1913.*

HEALTH DEPARTMENT REPORTS AND NOTES.

REPORTS

Berkeley, California.

The report of the Commissioner of Health and Safety for the fiscal year ending June 30, 1912, includes the report of such health work as is carried on in Berkeley.

Berkeley, a city of only 43,000 inhabitants, spends only 12 cents per capita per year on health work. Vital statistics in general are almost wholly lacking. One hundred forty-four deaths out of 409 are unclassified and no division is made by ages or months. Total cases of infectious diseases and division of total deaths by ages are the only other statistics found. The police act as sanitary inspectors semi-annually and their reports are said to reveal the fact that from a sanitary standpoint conditions in Berkeley compare favorably with any city in California.

The report of the Milk Inspector and Veterinarian tells of work accomplished.

The best feature of the entire report is the part used by Dr. A. F. Gillihan, President of the Board of Health. He points out the fact that public health work in all its branches is shamefully neglected; that the appropriation for the work of the Health Department is hopelessly inadequate, and that it is only by virtue of the city's good fortune in having naturally healthful conditions and surroundings that the present low death-rate exists. Inspection of food supplies, medical inspection of schools, municipal laboratory, and "publicity and education" receive no attention whatever.

Malden, Massachusetts.

The Board of Health of Malden presents its report for the year ending December 31, 1912. Malden is a city of 45,000 (estimated) population and is a suburb of Boston. During 1912 there were 527 deaths making a rate of 11.72 per thousand (erroneously written 11.72 per cent. in the report), the lowest on record. Of the 527 deaths 104 were of children under one year of age. The number of births is not given. There are no nosological statistics of deaths except in the case of contagious diseases, but the deaths are classified by ages, months, and nativity.

The administration and appropriations seem to be divided between the Board of Health, the Health Department and the Joint Standing Committee on Health. The necessity for, and duty of, these three branches is not made clear and they cause some confusion in the report if not in operation.

The work given in return for this money seems to be thoroughly and effectively carried on. Measles shows an abnormally high rate of incidence. Anti-mosquito measures were successfully introduced during the past year and will be continued. Improvements suggested for 1913 include a tuberculosis hospital, a refuse incinerator and other minor changes in the equipment of the division of refuse disposal.

The report indicates efficient work by the Board of Health but is in itself inadequate and incomplete.

Manchester, New Hampshire.

The Board of Health of Manchester presents its report for the year 1912. Manchester has a population of about 73,000 and is largely a manufacturing city as a result of its favorable location on the Merrimack River. It has a large foreign population, the

majority of which is French. It will be seen that conditions are not naturally promising from the standpoint of public health, but among the members of the Board are a progressive physician and a commercial chemist who is an expert in public health work and very good results have been obtained in the face of some opposition.

The death-rate for 1912 is 15.02, and the mortality of infants under one year of age was 149 per thousand births. The total expenditure for all health work including isolation and smallpox hospitals was about 31 cents per capita per annum. The tabulated reports of the vital statistics are incomplete, an old alphabetical system of classification of deaths being used which has many defects.

A considerable section of the report is devoted to a description of the various branches of health work carried on and a brief summary of the work accomplished in each and in some cases specimens of the forms used for reports to the Board.

The last eight pages of the report are devoted to the reports of the Milk Inspector, the Plumbing Inspector and the Sanitary Inspector. Of these the last two are routine statements of work done. The report of the Milk Inspector is complete and instructive. Medical inspection of schools is carried on by six part-time inspectors. All specimens for bacteriological examination are sent to the State Laboratory at Concord.

New Castle, Pennsylvania.

The Board of Health of New Castle presents its first annual report, probably for the fiscal year ending June 30, 1912, although no definite statement of this can be found. The report is addressed to the citizens of New Castle and announces its object in the first paragraph as follows: "The Board of Health has prepared this pamphlet in order that the citizens of New Castle may become acquainted with the work that is being done and learn of the results that have been accomplished and of the ideals aimed at."

The remainder of the book of fifteen pages carries out this idea and is a bulletin of information rather than a concise report for the year. Vital statistics are almost wholly neglected; the birth- and death-rates being omitted and no statement of total deaths or population (probably about 40,000) being given.

The city spends about $6,000 a year for health work and most of the space is devoted to arguments proving that this investment has paid well and should be greatly increased. The arguments carry conviction and, from what can be learned, hard work has been done and excellent results accomplished. The Board is evidently alive to its deficiencies as well as to its duties and will make improvements as rapidly as possible.

Wheeling, West Virginia.

No one who sees the report of the Health Department for the two fiscal years ending June 30, 1913, can fail to be favorably impressed with it from the first. The report is attractively printed and is illustrated with five half-tone engravings, one large folded-in map showing the location of privy vaults in the city and two graphic charts of causes of death.

Wheeling is situated on the Ohio River and has a population of about 43,000. The death-rate for the year ending June 30, 1913, was 17.51, but exclusion of deaths of non-residents brings this down to 14.01. The birth-rate is 22.56 for the year ending December 31, 1912, and the infant mortality rate is not stated nor obtainable from the figures, since births are given by calendar years and deaths under one year by the fiscal years. This emphasizes the necessity of making health reports by calendar years whenever it is possible. The expenditure during the fiscal year was 75 cents per capita of which amount 49 cents was used for garbage collection and disposal.

The city does not appear in a good light from the standpoint of communicable disease, perhaps chiefly because health work is rather an innovation and the physicians have not yet been educated to the point where they realize the necessity of reporting all cases immedi-

ately. This was particularly evident in respect to diphtheria and whooping-cough. Epidemics of diphtheria, measles and smallpox were vigorously fought by Dr. W. H. McLain, the Health Commissioner, who says in his report "At the risk of seeming peculiar, the writer admits that while all health department work is enjoyable, no part of the work is more interesting than 'stamping out' an epidemic." He numbers among his most effective weapons, vaccination against smallpox, diphtheria antitoxin for immunization, and isolation backed up by law. Of terminal disinfection he says—"The question of its efficiency or utility has been considered, but it should be continued if for no other reason than because it is easier to convince the householder of the necessity for a general cleansing of woodwork, floor, and furniture if fumigation is done by the health department."

The typhoid rate is abnormally high and Doctor McLain places the establishment of a modern filtration plant at the head of his list of recommendations for improvement. Among other needs are the building of a new sewage system and the abolishment of all privy vaults, and the introduction of food and plumbing inspection.

The present officials of the Health Department are about to retire after seven years of what appears to be active and efficient service. The Health Department has been changed from the old fashioned passive organization to an up-to-date, constructive, and vigorous department. It admits the many defects which still exist but does not hesitate to point them out and tell how they should be remedied. Improvements made under the administration now retiring include municipal collection and disposal of garbage, the establishment of a tuberculosis sanatorium, improvement in the vital statistics by enforced registration of births and contagious diseases, establishment of a bacteriological laboratory, of medical inspection of schools, of milk inspection and examination with publication of bacterial counts, and of educational work. The city is unfortunate to lose a man who has been as valuable as Doctor McLain.

DEPARTMENT NOTES.

The Need for Health Education.

Those who do not come into direct contact with the poorly educated classes are unable to realize the depths of their ignorance or their need for the most elementary instruction in personal hygiene as well as in their share in community sanitation. It is probable that much of the educational work carried on by boards of health, valuable and necessary though it is, fails partially in its purpose by being over the heads of those who most need to improve. Some of the popular fallacies are detailed in the issue of the *New York City Weekly Health Bulletin* as follows:

"Among the many difficulties encountered by the Inspectors and Nurses of the Health Department when urging parents to have the various physical defects found in school children treated or corrected, the numerous traditions, prejudices and superstitions existing among the different elements which go to make up the population of our cosmopolitan city stand out prominently.

"When the Inspector or Nurse suggests that an operation or other treatment be instituted some racial or religious prejudice or superstition will frequently be raised against such intervention. When glasses are suggested for defective vision, they are often told that eyeglasses are a luxury, that they make the child look old, that they are worn for style, that the child will get used to them, that they will become a habit, that they will cause the eyes to grow weaker or that they will interfere with the matrimonial chances of the daughter. When the parents are informed that the children do not hear well as a result, perhaps, of running ears, the Inspector is informed that this discharge allows the poison to escape and thus purifies the blood, and the statement is frequently made that at home the child hears too much. Difficulty of breathing due to enlarged

tonsils and adenoids results in the doctors and nurses being told by various elements of the population that God put the tonsils and adenoids there; that if the tonsils are removed, the throat will be too wide and air will rush into the lungs, subjecting the child to inflammation of the chest; that removal of the tonsils will interfere with the speech, the singing voice and the procreative power, or that the children will become nervous and depressed, possibly with suicidal tendencies.

"Voodooism is quite frequently met with amongst the negro population, and cases have been encountered where different colored yarns have been employed for the cure of contagious and other diseases of the skin and eyes.

"A request that hair matted by dirt and lice be cut frequently brings the retort that to cut the hair will prevent the growth of the child and diminish its strength. A request to have the defects of teeth remedied meets with the statement that pulling the teeth gives the children sore eyes; that it is bad luck for any poor child to have gold or silver in the mouth."

Vaccination Propaganda.

Discussing the physical vigor of school children and how to preserve it, Dr. S. Adolphus Knopf in the December 13 issue of the *New York Medical Journal* speaks of the necessity and effect of vaccination against smallpox as follows:—

"Vaccination against smallpox should be a requisite to admission to any school, public, parochial, or private, and periodical revaccination, particularly in times of epidemics, obligatory to continued attendance at school.

"Parents objecting to vaccination should be obliged to maintain their own schools. It would prove the best propaganda for compulsory vaccination. An additional and effective means to educate antivaccinationists and to convince them of their folly is to send them the authentic records wherein it is shown that in epidemics the nonvaccinated individuals have died and the vaccinated ones survived. A good authoritative statement to give to the antivaccinationists is the following: In Germany, where vaccination has been compulsory for many years, there has only been an average of fifty-three deaths annually from smallpox, while in Russia, where there exist no compulsory vaccination law, for the same population there have been forty thousand deaths from smallpox annually. There is virtually not the slightest risk from a careful antiseptic vaccination against smallpox made with pure virus. Thus, for example, in the Philippines two million vaccinations were made without a single case of serious infection. But we need not go to the Philippines or foreign lands for a lesson. In a health bulletin, we read the following: 'Smallpox, in the first decade of which we possess records, killed sixty-six persons out of every 100,000 of the population of New York City. Until 1875, when 1,280 deaths were reported from this cause, practically no preventive measures had been undertaken by the authorities, but the high mortality of that year stirred the city officials to action and free vaccination by the Department of Health was then established and has been in constant operation ever since. In the decade 1874–1883, smallpox caused the deaths of 247 out of every 100,000 of the population. During the decade just elapsed, less than one person out of every 100,000 of the population died from this disease. Notwithstanding this eloquent lesson on the necessity of the thorough vaccination of communities, there still exist antivaccinationists who pass fiery resolutions in their society meetings and heap contumely upon the heads of officials who are charged with caring for the physical welfare of our citizens.' "

Restraining Unruly Patients.

Among the amendments to the New York State Public Health Law passed last spring none met with such severe criticism as that providing that

"Whenever a complaint shall be made by a physician to a health officer that any person is afflicted with any infectious, contagious or communicable disease or is a carrier of typhoid fever, tuberculosis, diphtheria or other infectious disease and is unable or unwilling to conduct himself and to live in such a manner as not to expose members of his family or household or other persons with whom he may be associated to danger or infection, the health officer shall forthwith investigate the circumstances alleged. If he shall find that

any such person is a menace to others, he shall lodge a complaint against such persons with a magistrate, and on such complaint the said person shall be brought before such magistrate. The magistrate after due notice and a hearing, if satisfied that the complaint of the health officer is well founded and that the person is a source of danger to others, may commit him to a county hospital for tuberculosis or to any other hospital or institution established for the care of persons suffering from any such disease or maintaining a room, ward or wards for such person."

It was predicted that the section would be a dead letter from the beginning, that no health officer would avail himself of it, or any magistrate convict under it. That this is not the case is shown by the action of two health officers.

Dr. John S. Wilson, health officer of Poughkeepsie, N. Y., was the first officer to take action under the amendment. Some time ago a father and son were found to have tuberculosis and admission was secured for them in the Bowne Memorial Hospital. The apartments of the family were immediately renovated and disinfected, and arrangements were made for the mother and other five children in new quarters. The father did not care to remain under restraint at the hospital and returned home again and insisted on staying there. The physician in attendance was consulted and stated to the health officer that the patient was a source of danger to his family, and in accordance with the law the health officer had him taken before the city magistrate. After trial, in which the facts of the case were clearly presented, the judge committed him to the hospital as a careless and dangerous case. If this man still declines to remain at the hospital, further action will be taken against him.

The second example of the use of the amendment is a case of restraint of three unruly inmates of Iola Sanatorium in Monroe County who were formerly committed to the institution by a justice of the peace on the complaint of Dr. H. G. Shepard, the local health officer. Action was taken constraining them from leaving the sanatorium, as the testimony of the superintendent and house physician of Iola showed that they had left the grounds of the institution repeatedly without permission and had conducted themselves in such a manner as to expose other persons in the institution and in the neighborhood to the danger of infection.

Sanitary Drinking Cup.

The Department of Health of Harrisburg, Pa., has approved of a paraffined paper drinking cup, which has a flap which can be inserted in a slot, and thus close the folded cup so that dust cannot get into it. The cup is then put in a small paper envelope and can be carried in the pocket. Thus the cup can be used several times before it wears out. On the outside of the envelope is printed, "Drink from your own cup and avoid contagion. This sanitary drinking cup can be used many times. Use it and assist the Department of Health, City of Harrisburg, Pa., to prevent diseases.

Dental Inspection of Schools.

After medical inspection of schools comes dental inspection. Properly it should come hand in hand with it and many will be surprised to learn how close is the inter-relation. The plan to be used in Detroit is described in the following article from the October number of the Bu'letin of the Board of Hea'th of that city.

"In the spring of 1912 the Board of Estimates and Common Council of the City of Detroit appropriated five thousand dollars for the inspection and care of the children's teeth in the public and parochial schools.

"Four dentists were appointed inspectors, who examined the mouths of fifty thousand children in ten months, ending June 20, 1913.

"The following five clinics were established; the Board of Health Building, Grace Hospital, Bishop School, St. Albertus Parochial School and the Newberry School. The four latter clinics were operated Saturday mornings only and the Board of Health clinic six mornings of the week. During ten months twelve thousand children were treated in these clinics.

"Saturday mornings the clinics were besieged by children, sometimes numbering as high as one hundred and fifty, where an operator could see only thirty in a morning.

On account of the great number applying for treatment very little permanent repairative work or prophylaxis could be done as it was necessary to relieve many a toothache by treatment or extraction.

"This year the Board of Estimates and Common Council allowed the sum of eight thousand dollars, which amount enabled the Board to establish a clinic in the Solvay Guild House, West Jefferson Avenue, and in the Neighborhood Settlement Association, Fourth and Porter Streets, as well as increasing the capacity of the other clinics 100 per cent., thereby making the Board of Health clinic six days a week.

"In this work the Superintendent of Schools and the Board of Education have coöperated to the fullest extent. Lectures are being given in the schools, forty-five schools being equipped with lanterns whereby lectures on oral hygiene can be given to the best advantage.

"The most gratifying part of this work is that the patrons of the clinics appreciate the service rendered. There are still thousands of children who need dental care but the clinics are unable to provide for them at this time."

Pre-natal Instruction for Mothers.

"Another link has been added to the chain of effort in the reduction of infant mortality by extending the activities of the milk stations to include the care of pregnant women. Thirty-six per cent. of infant mortality occurs in the first month, and it is safe to infer that the majority of these children die either because the mothers were physically unfit to bear healthy children or because of their ignorance of the proper care of their offspring during the first weeks of life. The milk station at 2287 First Avenue, Manhattan, has been selected as a center for the instruction of nurses in prenatal work. When sufficiently familiar with its details, they will be assigned to other stations to carry it on. The nurses assigned to this work canvass the neighborhood and persuade expectant mothers to place themselves under medical care as early in pregnancy as possible; they communicate with the doctor of the hospital under whose care the patient may be, and explain the desire of the Department of Health to coöperate and the manner and degree in which it is prepared to do so; they instruct mothers in detail with regard to diet, fresh air, food, exercise, clothing, etc., and impress upon them the importance of nursing their infants.

"In normal cases visits are made every ten days ante-partum and every three days post-partum; in abnormal cases, as often as may be necessary. Visits are made for one month after labor. The mothers are then requested to enroll their children at the milk station, where they are cared for during their first and second years.

"To date one hundred and seventy-five mothers have been enrolled, of whom twenty-five have given birth to children. While it is too early to show by figures what can be accomplished, it is most gratifying to note the appreciation of the mothers and the enthusiasm of the nurses."

Bulletin of the Health Department of New York City, November 22, 1913.

Trapping Animals Alive.

The *Canal Record* for November 26, 1913, tells of the granting of a patent to an inspector in the Colon Health Office for an animal trap of improved design which makes it possible to capture game alive and uninjured. The trap, when sprung, encloses the animal in a three-sided pryamid of wire netting but when set, lies flat on the ground and may be completely concealed by covering with loose light material. The *Record* speaks of its application as follows:—

"The inventor regards the trap as especially valuable in capturing rats alive. The fleas on rats, which constitute the rat-infecting agent in plague, and which are annoying even when not infected, leave the rat soon after it dies. If a rat is killed near another animal, or near a human being, the fleas will seek one or the other as a new host. Herein lies the advantage of capturing the rat alive, in order to destroy the fleas with it. The ordinary traps, it is claimed, often fail in their mission, as after a few captures the rats cbecome unning enough to avoid them."

A Campaign Against Typhoid.

The Bulletin of the North Carolina State Board of Health for November, 1913, contains a short article telling how one city is starting out to reduce its contagious disease rate. We quote the article complete:—

"Several weeks ago the City of Charlotte elected Dr. R. F. Linebach, Assistant Superintendent of Health, and delegated to him the work of preventing disease. Doctor Linebach seems to have definite ideas as to his work; his campaign in attacking preventable diseases suggests the idea of selecting one specific thing and going after that, and then taking something else. We like this. There is entirely too much diffusion in planning health work, and we sometimes think the plans of health officers might be made a little less vague and a little more definite.

"Doctor Linebach has selected typhoid fever as the first disease with which he will deal; he has made an interesting study of the typhoid problem of Charlotte; his investigation has shown that 74 per cent. of the typhoid fever occurring in Charlotte occurs in families using wells, and 90 per cent. of the wells used by these families have been found polluted. His investigation has been in line with all other investigations in finding that the frequency of typhoid fever is greatest in those wards with open privies, and less in the wards that are thoroughly sewered. Based upon his investigation and findings, considerable pressure is being brought to bear on the city fathers to extend their water and sewer mains. Another important point still under consideration in the fight against typhoid in Charlotte is the proposition to close all polluted wells as soon as their pollution is shown by laboratory examination."

A Suggestion for Back Yards.

If the movement for cleaner back yards is not already under way in your city now is the time to launch it. If the people can be made to understand how the cleaning up of the yards may be directly profitable in cash as well as in the preservation of health they will be more enthusiastic. The following suggestions are clipped from the *Bulletin of the Health Department of Asheville, N. C.*:—

"A report says that $60,000 worth of vegetables were grown on the back yards of Minneapolis last summer. I am quite sure that a vegetable garden looks much better and is much better than weeds and tin cans and rags and papers and ash piles, to say nothing of this method of reducing the high cost of living.

"We are quite anxious that every person in Asheville should get interested in his back yard. The Woman's Civic Betterment League is intensely interested in the back yards of Asheville and have been making some pictures of the back yards of some of our leading citizens and it may be that some of these pictures will appear in the newspapers or in the moving picture show. This will not be a good advertisement for Asheville nor the particular citizen whose back yard the picture represents. It has been said that the proper cleanliness of the home and the people who live there is represented by the back yard, and not by the front yard. Suppose, Mr. Citizen, in the morning you go out and taken an inventory of yourself by looking over your back yard."

Getting the Public Interest.

The following article sent out by the Press Service of the *Chicago Department of Health* for publication in the papers of the city demonstrates one of the means the Department has taken to make itself more efficient:

"The Commissioner of Health has submitted to the City Council his estimate for the amount of money needed to carry on, in a fairly adequate way, the work of the Department in its various activities for the year 1914. Of course, as the responsible head of the Department, responsible to the people of this city for the manner in which he conducts the Department, for its value and efficiency to the Public, the Commissioner is urging the adoption of his estimates as presented. And because he believes that the people of Chicago are vitally interested in making it a safer place to live in from a health standpoint, he is asking their support and aid in securing an adequate appropria-

tion for health purposes. For the year 1913 the Council appropriated on a per capita basis, $2.85 for police purposes, $1.43 for fire protection and 30.8 cents for health protection. It is not asserted that the city is spending too much money per capita for police and fire protection, but that it is not spending enough for health protection.

"This year the Commissioner of Health is asking an increase of 16 cents or a total of 47 cents per capita for health purposes. In this connection attention is called to the fact that even with this asked-for increase allowed, Chicago will be spending less money for health conservation than New York, Philadelphia, Boston, Baltimore, Cleveland, Pittsburgh, San Francisco and many others of the smaller cities. A convincing fact as to the wisdom of increased appropriations is found in a study of the death-rates in the cities where increases of a substantial character have been made, is found in their materially diminishing death-rates.

"If you as a citizen are interested in bettering community conditions in Chicago, why not speak to your alderman about it? The men in the council are fair-minded, reasonable men; they are, naturally, interested in the matters which their constituents are interested in, and as a rule are both willing and anxious to carry out their wishes."

Department of Agriculture will use Bacterial Count in Milk Inspection.

Information has come to the Department of Agriculture that persons representing certain milk dealers are circulating the statement that the United States Department of Agriculture has abandoned all bacteriological examination of milk as a test for its cleanliness and fitness for human consumption.

The Department, therefore, has issued the following statement of its position.

1. All statements that the Department has abandoned, or will abandon the bacteriological examination of milk shipped in interstate commerce as a means of determining its cleanliness and fitness for human consumption are without foundation. While the Department has not fixed any specific bacteriological count as a standard in the enforcement of the Food and Drugs Act, it does use bacteriological examinations in reaching its conclusions, and will continue to use these methods irrespective of what action any Association may take. The Department has never stated that it will not use such methods.

2. The only change in policy in the Department in regard to bacteriological examinations has been to discontinue basing prosecution upon the bacteriological examination of a single sample. It now collects a number of samples at different times and examines them bacteriologically. If the bacteriological examination shows that the milk is not clean, but is not a serious menace to health, and the bacteriological deviation from clean milk is a small one, the Department, through the Bureau of Animal Industry, endeavors to teach the dairyman how to produce clean milk. If he then neglects to take measures to make his milk clean and safe for human consumption the Department, by taking action in the case of milk shipped in interstate commerce, endeavors to force him to bring his milk to a point of safety and food excellence through prosecutions under the Food and Drugs Act.

The Death-Rate of Damascus.

"Not long ago the French government undertook the collection of vital statistics and general information as to the sanitary status of certain of the European and Asiatic provinces and for the purpose forwarded to the authorities of these provinces blank forms—questionnaires—accompanied by the usual polite note requesting that the data be supplied thereon and returned to the statistical bureau in Paris.

"The Pasha of Damascus promptly replied to the questions asked as follows:

"*Q.* What is the death-rate of your province?

"*A. It is the law of Allah that all should die—some die young, some die old.*

"*Q.* What is the annual number of births?

"*A. Allah alone can say. I do not know and hesitate to inquire.*

"*Q.* Are the supplies of water sufficient and of good quality?

"*A. From the remotest period of time no one in Damascus has died of thirst.*

"*Q.* Give general remarks as to character of local sanitation.

A. A man should not bother himself or his brother with questions that concern only Allah.

"EDITOR'S NOTE.—(a) All of which points to a rich field for sanitary missionaries. (b) Chicago knows little more about its births than does Damascus."

Bulletin of the Chicago School of Sanitary Instruction.

Prevalence of Venereal Diseases in Oskaloosa, Iowa.

"All the physicians of the city were asked to report to the health officer the number of cases of syphilis and gonorrhœa that they had treated during the year ending July 31. All reported. They reported a total of 62 cases of syphilis, 127 cases of gonorrhœa and 51 cases were not classified by those reporting. This is a total of 240 cases of venereal diseases occurring in a city of 9,466 inhabitants during the past year. It is interesting to compare their number with the combined total of all cases of typhoid fever, tuberculosis, diphtheria, scarlet fever, measles, german measles, smallpox, chicken-pox and whooping cough reported during the same period of time, which is 143."

From the annual report of the Health Officer, Dr. Mark F. Boyd, to the Board of Health of Oskaloosa, Iowa, for the year ending July 31, 1913.

No Friedmann Institute for Iowa.

Because of the efforts of the promoters of the so-called "Friedmann Treatment" to establish an institute at Colfax, one of Iowa's most famous summer resorts, the State Board of Health of that state has adopted the following interesting rules:

SECTION 1. No hospital, sanatorium, institute or place for the care or treatment or persons afflicted with tuberculosis, syphilis, or any other infectious or contagious disease, shall be established, maintained or kept within the corporate limits of any city or town in the State of Iowa, or within three miles of such corporate limits, without first having all plans and methods to be used or followed, in conducting such hospital, sanatorium, institute, or place, and the location thereof submitted to and approved in writing, by the State Board of Health; and, if within the corporate limits of any city or town, such location must be approved by the local Board of Health.

SECT. 2. No business or profession, the carrying on or practice of which shall be calculated and designed to attract and shall tend to attract to any one locality, in unusual numbers, persons afflicted with tuberculosis, syphilis, or any other infectious or contagious disease, shall be carried on or practiced within the corporate limits of any city or town in the state of Iowa, unless the person, firm or corporation conducting such business or profession, shall have first provided a hospital or sanatorium adequate for the care, board and lodging of all persons coming to such city for such treatment, as provided in the preceding section.

These rules end the existence of the Friedmann institute in Iowa until it is established that the "cure" has proven reasonably successful.

Progress in North Carolina.

"There are eleven whole time County Health Officers in North Carolina. In this North Carolina leads every other state in the Union."

Bulletin of the Health Department, Asheville, N. C., October, 1913.

PUBLIC HEALTH NOTES.

Inadequate Mortality Statistics.

The following clipping from the October number of the *Medical Review of Reviews* takes up a subject which must be given serious consideration by both sanitarians and physicians. The article by Doctor Oertel is similar to one by the same author in the *Journal of the American Medical Association* for June 7, 1913, and is well worth reading.

"The importance of birth registration has been repeatedly placed before the medical profession. More essential for the elaboration of vital statistics is the accurate determination of the direct and indirect causes of mortality. In the May issue of the *American Underwriter*, Dr. Horst Oertel has called attention in a direct and straightforward way to the inaccuracy of American mortality statistics. In a brief but forceful arraignment of the unreliability of our present compilations as to the causes of death, he places a full measure of responsibility upon our present inadequate system of hospital administration, the ignorance, carelessness and haste of physicians in making out death certificates.

"While his plea for pathological diagnosis is at the present time impracticable of attainment, there is an excellent suggestion that 'every death certificate should show plainly whether a return of the cause of death is based upon clinical symptoms alone or additional objective microscopic evidence during the life of the individual or finally on the complete autopsy. These should be kept apart in three groups as unreliable, more likely reliable, and reliable death records.'

"The new courses in public health and preventive medicine should stress the importance of vital statistics, particularly that portion dealing with the causes of death. It is discreditable, though wholly understandable, that American statistics are at present so fraught with errors and inaccuracies that they are unsatisfactory for comparison with elaborate foreign statistical reports dealing with mortuary facts. Increased facilities for making autopsies, raising the standards of medical education, and overcoming the popular prejudices, sentimental and otherwise, against autopsies, present the lines of attack whereby this odium may be relieved."

Camp Sanitation.

The *Engineering Record* for December 13 contains a note on camp sanitation which is interesting, inasmuch as it indicates the awakening of the engineers to their responsibility along sanitary lines. The State of Washington probably presents an especially good field for the beginning of the work of the Red Cross on account of the work which Doctor Kelly of the State Board of Health has already undertaken in the same line.

"At the recent Conservation Congress Miss Mabel Boardman, chairman of the executive committee of the American Red Cross, pointed out the work that lay before sanitarians in lumber camps. The work is by no means a small one. In the State of Washington alone no fewer than 47,000 men are employed in the lumber districts, while 800,000 is the estimate for the whole country. These men all live under comparatively primitive conditions, in more or less temporary camps, where sanitation, unless the management is progressive, is likely to be one of the last thoughts. She offered, on behalf of the Red Cross, to coöperate with lumber companies in supplying physicians who would give simple instruction, not only as to camp sanitation, but also as to first aid and the prevention of accidents. Attention is called to the matter here because good results would probably be obtained by investing the State Board of Health with supervisory and police powers. This has worked successfully in at least one state. The subject deserves the attention of saniotarians throughout the country."

Vital Statistics in the United States.

The following abstract is taken from the "Physicians Pocket Reference" of the Bureau of the Census and records the extension of vital statistics in this country and its present status:

"Beginning with the seventh census (1850) an effort was made to collect statistics of deaths through the enumerators of population as a part of the general census. This method was unsuccessful in giving reliable results—vital statistics can not be obtained by enumeration but only by immediate registration—but the plan was pursued at each subsequent census until the thirteenth (1910), when it was dispensed with entirely.

"In 1880 the results of registration of deaths under state and municipal authority were utilized, thus establishing the registration area. This consisted of only two states, Massachusetts and New Jersey, the District of Columbia, and certain registration cities in non-registration states. The aggregate population represented was 8,538,366, or 17.0 per cent. of the total population of continental United States.

"For 1900 there were added the states of Connecticut, Delaware (not entitled to admission and dropped at the next census), New Hampshire, New York, Rhode Island, and Vermont, which increased the percentage to 31.4.

"For the census year 1900 (ending May 31), there were added Maine and Michigan, raising the percentage to 37.9.

"The compilations theretofore made were only for census years, there being no data for the intercensal period. Beginning with the calendar year 1900, and since the establishment of the Bureau of the Census upon a permanent basis, there have been regular annual reports (Mortality Statistics, 1900 to 1911) and large additions to the registration area due to the constant efforts made by the bureau in coöperation with medical and sanitary organizations and with state authorities.

"Indiana was added for the calendar year 1900.

"California, Colorado, Maryland, Pennsylvania and South Dakota (dropped in 1910) were added for 1906; Washington and Wisconsin were added for 1908; Ohio for 1909; Minnesota, Montana and Utah for 1910; and Kentucky and Missouri for 1911. The aggregate estimated population for the last year was 59,275,977, or 63.1 per cent. of the total estimated population of continental United States. The vast number of 839,284 deaths was returned for the latter year, so that although the United States does not possess a complete system of death registration, it does possess returns of great value from the twenty-two registration states, not including North Carolina from which returns are received from all municipalities of 1,000 population and over, under state law, District of Columbia, and 38 registration cities in non-registration states now constituting the registration area.

"The fundamental importance of accurate vital statistics for the protection of human health and life is universally recognized, and greater attention is being given to the subject throughout the country. Especially is there widespread interest in the South, which has heretofore been entirely unrepresented by reliable state registration—to its large sanitary and financial loss, because vague rumors of high mortality can only be confuted by accurate registration of deaths."

Facts About Collection of Garbage and Refuse.

"The average weight of garbage in cities is 1,150 to 1,475 pounds per cubic yard. The average weight of mixed rubbish and ashes is 800 to 1,100 pounds per cubic yard. In summer ashes form one third the mixture and in winter three fourths. The actual weights vary in different cities and in different districts in the same city, according to fuel used, whether rubbish is burned in stoves, habits and wealth of citizens, etc., so that a city must be divided into districts for collection purposes according to these variations as determined by a careful study.

"A garbage collector requires an average of three minutes to remove the garbage from a house, half this time being consumed in getting into and out of the houses, so that a back-gate collection will require much less time. He travels $2\frac{3}{4}$ to 3 miles an hour and visits 40 to 90 places in an eight-hour day.

"The garbage produced per capita averages from 175 to 225 pounds per annum, rubbish and ashes 325 to 530 pounds. Street sweepings amount to about ½ cubic yard per capita.

"Mixed collection of all garbage and refuse costs less than separate collection. The mixture of all refuse is cleaner to handle, prevents fly breeding and lessens dust from ashes. The can for separate garbage collection is liable to become a greater nuisance than frequently collected garbage."

Municipal Engineering, October, 1913.

Dental Conditions and Cancer.

"In view of the movement to educate the public regarding the ravages of cancer and the importance of early detection of the disease, special interest attaches to a paper read before the recent International Congress of Medicine by Dr. F. St. J. Steadman, dental surgeon and lecturer on dental histology at the National Dental Hospital, which has now been reprinted in pamplet form.

"Doctor Steadman developed the theory that a chronic septic condition of the mouth is by far the commonest predisposing cause of cancer. In the course of his practice he has found that most cases of cancer occur in those parts of the body most constantly infected by the constant swallowing of pus, that is to say the ailimentary canal and its associated parts.

"All through my investigations, he says I have been extremely careful to exclude all possibility of the disease of the gums known as periodontal disease having developed after the cancer. The question arises how many years does it take for the inflammation of the bone of the jaw or teeth to advance sufficiently to allow the teeth to fall out? In other words, for how many years have these patients been swallowing pus? In my opinion, from fifteen to twenty-five years as a rule. Sometimes, however, the disease runs a fairly rapid daily course, in which case the teeth would be lost sooner than in fifteen years, and in some cases I have reason to believe it is so slow that it takes even more than twenty-five years."

Doctor Steadman summarises his conclusions as follows:

"1. That, apart from the sexual organs, over 86 per cent. of all cancer occurs in the alimentary tract.

"2. That long-standing chronic inflammation in the sexual organs and in other parts of the body is known to predispose to the development of cancer.

"3. That the great majority of persons suffering from cancer in the alimentary canal have advanced pyorrhœa alveolaris, which has been present very many years.

"4. That this advanced periodontal disease is not nearly so common in persons not suffering from cancer.

"5. That it is a well-known fact that the constant swallowing of pus can, and does, in many cases, bring about chronic gastritis.

"6. That the majority of patients suffering from cancer of the stomach have had chronic gastritis for many years prior to the development of the malignant disease.

The Medical Officer, November 22, 1913.

Heat and Infant Mortality.

An interesting article entitled "Heat and Infant Mortality" by Dr. J. W. Scherechewsky, Surgeon, U. S. Public Health Service, appeared in the December 5, 1913, issue of *Public Health Reports*. Doctor Scherechewsky, after considering the relations of the summer mortality of infants to the temperature curve, the character of deaths in the early and late summer, indoor temperatures, effects of humidity, circulation of air, housing conditions, and the effects of heat upon infants, draws up the following conclusions:—

"1. The action of heat as a direct cause in the summer mortality of infants has been greatly underestimated in the last twenty-five years. In the future much more weight should be given to its influence.

"2. The lethal action of heat is a function, not so much of the maximum and mean temperatures of the external air as of the indoor temperatures, which, in the late summer, may continue to be high, in spite of remissions in temperature of the external air.

"3. The action of dirty and stale milk in causing the death of infants has been given a significance which has overshadowed other factors of equal or greater importance.

"4. There is evidence to show that a certain proportion of infant deaths are due to specific infections, in the dissemination of which contact infection and flies doubtless play a part.

"5. As a result, future activities for the prevention of infant mortality must concentrate themselves to a great extent on the question of housing, especially the conditions productive of high indoor temperatures, such as overcrowding, narrow streets, and the absence of through ventilation.

"6. Poor housing conditions can be partially neutralized by the proper care of babies in the summer. The general public should be educated as to the importance of high indoor temperature in causing the death of infants, and especially as to measures which prevent babies from suffering from the heat.

"7. Breast feeding must still be regarded as a most, if not the most, important preventive of the summer death of infants."

Popular Health Education in England.

With customary thoroughness the English sanitarians have taken up the plan of educating the public in regard to health matters by posters and handbills. The following clipping tells of the campaign against tuberculosis:

"The publisher of *The Medical Officer*, 36–38, Whitefriars Street, E. C., on receipt of a postcard, is glad to send to tuberculosis officers and others interested, a complete specimen set of the various posters, handbills, etc., issued from this office in connection with the campaign against consumption. He has already supplied upwards of one million copies of these various designs to sanitary authorities in the United Kingdom, thus introducing pictorial methods of health teaching for the first time in this country. The large posters (60 x 40 inches) are suitable for display on hoardings, or mounted and varnished, with rollers top and bottom for hanging in schools, libraries, and assembly rooms, hospitals, dispensaries, and other public places. Smaller posters (25 x 20 inches) are designed for use, mounted or unmounted, where space is limited. Handbills (12 x 9 inches) are available for house-to-house distribution, or printed on card for hanging in the homes of patients. These bills are also often used for teaching purposes in schools, a copy being given to each pupil, who probably takes it home and explains it in the family circle. All the publications described above have space left at top and foot for the insertion of local information, such as the addresses of tuberculosis dispensaries, provision of free sputum flasks, disinfectants, etc."

The Citizen and the Public Health.

Public Health Reports for November 7 contains an article on the above subject by Assistant Surgeon-General Trask which sums up the important topic of the individuals' relation to the health of the community in such a complete form that a considerable part is quoted here, with the hope that it may be quoted in part, if not wholly, by health department bulletins and daily papers, as well as professional journals, so that it may assist in the work of dissemination of knowledge of public health work.

"The health of the community is the combined health of those living in it. The relation of the citizen to the health of the community is therefore his relation to the health of his neighbors and of those living in the same city or state.

"The health of the community should be of interest to every indivual, for upon it depends the welfare of himself, of his family, and of his fellow-citizens. Upon the health of the people depends the happiness and prosperity of the community. Without health there can be no real prosperity and such material success as may be attained is of little benefit.

"To the extent that the inhabitants of a community are sick the community itself is diseased. The community has health only in so far as the people are free from disease. To a community health is a valuable asset. It insures prosperity. It attracts people.

It increases the value of the land. Many letters are received daily at the Public Health Bureau at Washington from people who are contemplating buying land or moving from one state to another asking about the health conditions of certain localities. They want to know whether there is much sickness in this or that locality, whether there is any malaria, much typhoid fever or tuberculosis, and whether there is a pure water supply. People are thinking in these days of their physical welfare and have no desire to live in localities where insufficient attention is given to the prevention of disease and where there is more sickness than there should be. The community that has health has a distinct advantage in the competition for economic prosperity over the sick community.

"The health of the community depends upon the health of the citizens, but the health of each individual also depends in some measure, often in large measure, upon that of the other members of the community. Health of the individual is therefore a condition that, generally speaking, can be maintained only by a combination of individual and community effort, and its importance is such that in the activities of the city and of the state it should hold a prominent place. The health of the community should be of greater concern than commercial prosperity, for it is essential to commercial prosperity. Necessary as are our courts, our fire and police departments, and our educational systems, the importance of the community's attention to the citizen's health is second to none.

* * *

"The health department is the result of our knowledge that disease can be prevented and that the degree of the community's health depends upon the desire of the citizens to have health, their intelligence, and the amount of effort they are willing to make individually and through their municipal or other government to attain it.

"The work of the health department should mean more to the community than the perfunctory performance of certain duties. It should be a thing of vital interest to every individual, and as such should receive his earnest coöperation.

"A part of the work of every health department is the enforcement of the laws and regulations which the people have had adopted for the protection of the community's health. Every intelligent citizen should know what these laws and regulations are. He should also compare them with the laws and regulations of other communities that he may know whether his city or state is doing as much as it should to protect a thing of so great importance to the individual and general welfare as the community's health.

"But of more importance than the enactment of laws or the promulgation of regulations is their enforcement. It is not the laws on the statute books that are of value, but the ones that are enforced.

"Every thoughtful citizen should know what work the health department is doing and the extent of protection from disease that is being given to him and to those dear to him. Such interest will in itself insure more efficient work, for the health department needs the interest of all intelligent citizens. It needs their moral support, their approval of work accomplished and at times their coöperation.

"Every household should see that it does not spread disease to others, that it does not become a focus of infection endangering the welfare of the community.

"Every citizen should keep his premises clean; should see that he is not maintaining collections of garbage or refuse in which flies may breed. He should see that all sanitary regulations are complied with and then should supplement these with as many more as his knowledge tells him will be useful. Whenever any member of his household contracts a communicable disease he should take such precautions as will prevent its being spread to others. He should bear in mind that every case of a communicable disease is contracted directly or indirectly from some infected person and that the case in his family is probably due to some one's neglect of his responsibilities to the community. His household should not become the cause of the further spread of the disease. If the disease

is one that should be reported to the health department he should see that this is done, and in any case if in doubt he should communicate with the health department for advice or instructions, for the health department is maintained by him and his fellow-citizens for this purpose."

Radium Treatment of Cancer.

The American Society for the Control of Cancer fears that exaggerated ideas of the power of radium in the treatment of cancer may result from the recent publicity given to this agent in the daily press. It appears highly important at the present time that the limitations of radium in the control of cancer should be emphasized as well as its favorable effects in certain cases. Otherwise the familiar story of new hopes, destined only to disappointment, will again be recorded at the expense of many unfortunate sufferers.

The curative effects of radium are practically limited today to superficial cancers of the skin, to superficial growths of mucous membrane which are not true cancers, and to some deeper lying tumors of bone, etc., which are not very malignant. The problem of the constitutional treatment of advanced, inoperable cancer is still untouched by any method yet devised or likely to be devised for administering radium. Even among the so-called radium cures, it still remains to be determined in many cases whether the favorable result is permanent or is to be followed sooner or later by the usual recurrence. The most competent surgeons do not dare to pronounce a case cured until five years have elapsed after an apparently successful operation. The same test must be applied before we can finally determine the real value of radium.

It should be emphasized especially that radium cannot at present exert any permanent benefit on generalized cancer, and since cancer, in a very large proportion of cases, is widely disseminated in the body early in the course of the disease, this entire group of cases can expect no important relief from radium. Another large group of cancers is comparatively inaccessible to the application of radium, so that the ultimate course of the disease is not effected, although certain portions of the tumor may be reduced in size. Again, many forms of cancer, although localized and accessible to radium, grow very rapidly and resist the curative action of this agent, so that no real benefit can be expected from its use.

The best results of radium therapy can be secured only when comparatively large amounts are available for use and the present limited world's supply of this metal places it out of reach of the great majority of patients. It is to be feared that much harm may result from undue reliance upon small quantities of low grade radium when other methods of treatment would be more effective.

Evidence of the possible extent of popular misconception on this subject is found in a pathetic letter recently received at the New York Health Department from a sufferer in California who had somehow obtained the impression that the United States government was about to purchase large quantities of radium from aboard. Assuming that the "New York City physician" would have a plentiful supply, the writer asked that some be sent to him C. O. D. without delaying to advise him as to the cost.

Under the term "cancer" are commonly grouped several diseases which differ widely in nature, causation, and courses, and in their response to radium. It requires both skill and experience to determine just what type of cancer one has to deal with as well as the advisability of using radium. Hence, it is extremely difficult to formulate an accurate statement of the true position of radium therapy, but it is quite clear that the exploitation of this remedy as a cure of cancer in general is to be deprecated.

The Action of Bile upon the Bacillus Coli.

"In *The Journal of Infectious Diseases* for May, E. O. Jordan gives the record of a series of experiments designed to determine to what degree the multiplication of the bacilli coli takes place in bile. With a view to ascertaining the degree of inhibition, a number of pure cultures of various ages and histories were placed in suitable suspension

and in parallel series upon plain agar and bile-agar.

"He ascertained that freshly isolated strains of this organism as well as those under long cultivation were inhibited by the bile to a noteworthy degree. This growth seems to take place with little regard to the vigor, or lack of it, of these bacilli. The observation showed that bile inhibits at least from one-third to one-half of the vital cells of the bacillus coli, and sometimes a much greater proportion; that freshly isolated cultures are inhibited in the same degree as those under long cultivation and those subject to long sojourn in water; that there is no evidence that bacilli coli that were unable to grow on the bile medium were any more attenuated or less vigorous biologically than their fellows.

"Jordan holds these facts to demonstrate that bile is an inhibiting substance for the bacillus coli as for other microorganisms, and that its presence involves the suppression of a certain number of viable cells."

The American Journal of Clinical Medicine, December, 1913.

How Red Cross Seals Have Helped.

Although it is too early in the year to tell what the financial results of the 1913 Red Cross Seal sale have been, evidence is already at hand that in several states the anti-tuberculosis campaign has taken on a new lease of life or been greatly stimulated because of the campaign.

South Carolina is one illustration. Here it has been extremely difficult to effect any state-wide effort and what local movements were carried on were not very far-reaching. Through the National Association's field agent, Dixon Van Blarcom, a state Red Cross Seal Commission was organized and a campaign of education, money-raising, and coöperative work has been carried on in over 150 towns and cities. The already awakening forces of Columbia were further stimulated and now a visiting nurse is at work in that city and a regular tuberculosis clinic under the direction of Miss Bessie Ray of the Associated Charities, has been established. Other cities have also awakened and with small funds are planning for local work. The State Commission will also have a small balance in the treasury as a nucleus of a fund for the State Association.

South Dakota is another state where Red Cross Seals have opened up a new work. Here, Mrs. E. P. Wanzer of Armour was interested by the National Association in the seal sale. They organized a State Commission and carried on a vigorous sale—over 100 cities and towns. While the aggregate sale will not be large compared with that of eastern states, it represents a fine beginning of anti-tuberculosis work in a state where nothing before had ever been done. Hundreds of men and women and children have been interested permanently through the Red Cross Seal Campaign—The Anti-Tuberculosis Crusade.

Oklahoma too has shown signs of a new life as a direct result of the Red Cross Seal. The moribund state organization has been rejuvenated and put on a basis which bids fair for future work. Interest has been stimulated throughout the state. The campaign has had the backing and financial support of the State Board of Health and its officers.

What has been done in these three states has been duplicated or surpassed in such states as North Carolina, Arkansas, West Virginia, Missouri, to say nothing of the long list of states which, for the same thing, have been active—Anti-Tuberculosis work.

X-Ray Examination of Pre-Tubercular Children.

The *Medical Officer* of November 6, 1913, contains a note on an investigation of a method for the early diagnosis of tuberculosis which seems very promising and worthy of further study. We quote the article complete:

"The results of a series of examinations in the schools of the chests of delicate children by X-rays, made by Dr. A. G. L. Reade, have been reported to the London county council. On examining some children by the ordinary physical methods it may be found that they are the subjects of early pulmonary

tuberculosis, but in the vast majority of cases no physical signs are observed. In some cases, it is reported, the X-rays revealed evidence of definite tubercular disease, but in the vast majority of cases the examination showed shadows cast by enlargement of glands. The glands may be primarily tubercular, or the enlargement may be due to lesions in the lungs so small that they escape detection during life. It seems certain that the X-ray appearances described are produced by disease in the region of the bronchial glands, and it is reasonable to suppose that the shadows are due to tubercular lesions. It is, adds the report, evident that the recognition of these X-ray appearances as pathological and not physiological is of the utmost importance. If the shadows are found when there are no physical signs in the lungs, the case is in an early stage, when treatment may reasonably be expected to be more beneficial than if left till the disease is further advanced and has caused such pulmonary involvement as to be recognized by physical signs in the chest."

Immunization to Typhoid and Tuberculosis.

The recent discrediting of the Friedmann cure has left the public mind in a condition unfavorable to the reception of any new cures which are not thoroughly tested and proved. Notwithstanding this fact the *New York Medical Journal* of October 11, 1913, gives space to a preliminary report on a system planned to produce immunity to typhoid or tuberculosis by the mere drinking of the milk of immunized animals. The report is brief and tells little of the details of the method or of any confirmatory experiments, but even before the completion of the projected demonstrations the author feels justified in publishing the following conclusions:—

"1. Cows and goats can be immunized against tuberculosis and typhoid fever without any ill effects.

"2. During and after immunization the milk remains wholesome, differing in no respect from other milk. My family and myself have taken for months milk immunized against typhoid and tuberculosis.

"3. The milk of immunized animals contains antitoxines and bactericidal substances, differing in no respect from those of blood serum.

"4. The usual laboratory tests demonstrate the presence of agglutinins, precipitins, and bacteriolysins.

"5. Immunized milk is inimical and destructive to the microörganisms against which the animal is inoculated.

"6. Immunized milk lessens the liability of infection, owing to its bactericidal properties and productive passive immunity.

"7. It is useful and indicated in cases where passive immunity is desired, and subcutaneous injections are impractical and contraindicated.

"8. Passive immunity and protection against infection is obtained by drinking the milk of immunized animals. The drinking of six ounces for five alternate days produces protection against typhoid and tuberculosis infection. The milk must be taken on an empty stomach.

"9. The fact that immunized milk destroys the tubercle and typhoid bacilli and produces antibodies in the blood, clearly shows its indication and usefulness in cases of typhoid fever and tuberculosis. It should be used in every suspicious case, as it may absorb an infection in its incipiency."

Bacterial Sprays in Diphtheria Carriers.

"From time to time numerous investigators have advocated the use of bacterial sprays, usually fluid cultures of the staphylococcus aureus or the lactic acid bacilli, for 'freeing' the throat secretions of diphtheria carriers from the Klebs Loffler bacilli. This procedure defeats the practical value in employing culture methods for the release of quarantine. Frequently, where cultures are submitted for diagnosis, the normal throat organisms will outgrow the Klebs Loffler bacilli and give negative results. Although these instances are the exception, it can be more readily obtained by the introduction of pure bacterial sprays of other organisms. During

convalescence, where the diphtheria bacillus is present in comparatively small numbers, and usually confined to the deeper follicles of the tonsillar structure, cultures made in the usual manner will fail to reveal any other organism than that in the bacterial spray.

"The laboratory of the Department has made a very careful investigation and finds that the introduction of bacterial sprays do not destroy the Klebs Loffler bacilli in throat secretions. On account of the predominance of the organism introduced in the spray, oftentimes the cultures do not reveal the growth of the Klebs Loffler bacilli, but this bacillus still remain present in the source from which the culture was made and by a cessation of spraying will permit it to reappear in cultures.

"For these reasons the use of bacterial sprays for the obtaining 'diphtheria free cultures' furnishes false security, and defeats the efficacy of the culture method for determining the time for the release of quarantine. Diphtheria free cultures can be obtained by the introduction of the bacterial spray, but the diphtheria organisms may still exist and are in no way influenced by the presence of the bacteria in the spray. Persons released from quarantine by such cultural evidences may still remain a 'carrier source' in the transmission of diphtheria."

Buffalo Sanitary Bulletin, September 30, 1913.

Seven Hundred Thousand School Children of New York to Help the Health Department Keep the City Clean.

"In the public schools the children can learn to help the health department keep the streets, playgrounds and the gutters free from rubbish; the alleyways clean—where filth and disease lurk.

"To prevent insanitary conditions about milk stations, the open disregard of uncovered and overloaded garbage cans, the dangerous obstruction of fire-escapes, the sale of poisonous candy and ice-cream.

"To assist the police maintain orderly conduct on the streets and playgrounds.

"The children of every public school can be organized into small civic classes or clubs, each devoted to the care of some particular need of the city—keeping fire escapes clear of obstructions. The children's reports on the conditions of the localities where they live can be brought to the classroom for discussion and whatever is urgent submitted to the proper city authorities.

"Such practical work gives the children an understanding of the city's needs, and from the earliest years the public schools can teach their children how the city is governed and make them familiar with its buildings, institutions and industries"

Bureau of Municipal Research, New York, November 26, 1913.